

LOCUS OF CONTROL

AND

THE MENSTRUAL CYCLE

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DECLARATION

I declare that this thesis reports my original work, that no part of it has been previously accepted or presented for the award of any degree or diploma by any University, and to the best of my knowledge no material previously published or written by another person is included, except where due acknowledgement is given.

Mary Alice Yeates.
29/11/83.

This thesis describes
original research carried
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ABSTRACT

This thesis reports a study that examines the relationship between health locus of control, menstrual locus of control, menstrual experience, and attitudes towards menstruation in 132 adolescent girls. It was found that:

- (1) The internal consistency coefficients of most of the measures used in this study particularly the locus of control scales and the attitude questionnaire, were considerably lower than those reported in American studies with older women. This suggests that the adolescent girls in this study had not as yet developed consistent attitudes towards menstruation and locus of control beliefs in relation to both health and menstruation. A supplementary study conducted with older Australian women provides support for a tentative hypotheses that these may develop with age and experience.
- (2) In examining the relationship between locus of control and the menstrual cycle, it was found that although correlations between the menstrual locus of control and the menstrual cycle measures were low, most of them were statistically significant and in the predicted direction. Overall the result suggest that externals report experiencing greater menstrual distress and have more negative attitudes towards menstruation than internals.

- (3) Consistent with the findings of American studies it was found that girls who reported experiencing greater menstrual distress also held more negative attitudes towards menstruation than those who reported experiencing less distress.
- (4) In examining the results obtained in this study with those done in America using similar measures, it was found that although the Australian adolescents had more negative attitudes towards menstruation than the American subjects, they reported having similar menstrual experiences.

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Introduction

This thesis reports research merging two well established fields of research, namely locus of control and the menstrual cycle.

There exists a large body of literature pertaining to the locus of control construct in general but in recent years there has been a gathering wave of new work into more specific areas of application of this construct, and the development of more specific measures of locus of control. Research on menstruation and the menstrual cycle in recent years has, in contrast, taken on a broader perspective. It is no longer confined to studying the cycle as a circumscribed phenomenon peculiar to female hormones and biologic rhythms but is also seen in the context of a wide socio-cultural network of meanings (Dan 1980). Hence it is in keeping with directional trends in both areas to investigate the question of whether locus of control is a determinant of attitudes towards menstruation or a distress experienced in relation to it.

The thesis is in two parts. Part 1 includes a review of the literature pertaining to such aspects of the locus of control construct and the menstrual cycle as are relevant to the purposes of the study, and examines the case for relating these variables. Part 2 is a report of the study which examines the relationship in adolescent girls between health locus of control, menstrual locus of control, menstrual experience and attitudes towards menstruation.

PART 1 - LOCUS OF CONTROL AND THE
MENSTRUAL CYCLE: REVIEW

1.1 LOCUS OF CONTROL

1.1.1 Internal-External Locus of Control

Individuals perceive events in their lives as being a consequence of their own actions and thereby controllable, or as being unrelated to their own actions and therefore beyond personal control. The internal-external control construct is an integral part of social learning theory (SLT), (Rotter 1954) and was originally conceived as a generalized expectancy to perceive reinforcement either as contingent upon one's own behavior (internal control) or as a result of forces beyond one's control and due to chance, fate or powerful others (external control). (Rotter 1966.)

Within SLT, this construct forms but one element of a behavioral prediction formula where behavior is seen as goal directed and the potential for a behavior to occur in any specific psychological situation is a function of both the expectancy that the behavior will lead to a particular reinforcement in that situation and the value of that reinforcement (Rotter 1954). Thus a reinforcement serves to strengthen an expectancy that a particular behavior or event will be followed by that reinforcement in future. The nature of the reinforcement (i.e. whether positive or negative), the past history, sequence and

patterning of such reinforcements, and the nature of the situation will determine whether the individual perceives such a behavior-reinforcement sequence as being within his/her control or as being determined by forces beyond it.

"Expectancies in each situation are determined not only by specific experiences in that situation but also, to some varying extent, by experiences in other situations that the individual perceives as similar" (Rotter 1975, p.57).

When an individual perceives two situations as similar his expectancies based on past reinforcement experience will generalize from one situation to another, but as the individual's experience in a particular specific situation increases the individual will develop specific expectancies in regard to that particular situation.

1.1.2 Generalized versus Specific Expectancies

The distinction between specific expectancy and generalized expectancy is an arbitrary one; the more narrowly one defines a generalized expectancy the more specific it becomes and the narrower and more specific the expectancy, the higher the prediction that results.

It therefore stands to reason that, for broad predictions from limited data, and for predictions in novel and ambiguous situations when one has not built up a set of expectancies, one relies on broad generalized expectancies built upon past experience in a number of different situations. The limitation of using a very broad measure of expectancy is that it allows for predictions in a large

number of different situations but at a low level of prediction. On the other hand a more specific measure of expectancy in a particular situation would allow for greater prediction of behavior in that situation and situations of the same sub class, but poorer predictions for other kinds of situations that are to some degree similar.

The relationships between generalized expectancies, specific expectancies and the amount of previous experience that an individual has had in a particular situation is expressed in the formula developed by Rotter (1954 p.166):

$$E_{S_1} = f \left(E_{S_1}' \ \& \ \frac{GE}{N_{S_1}} \right)$$

S_1 represents the specific situation

N represents the amount of previous experience the individual has had in that situation

E represents expectancy

E_1 represents a specific expectancy

GE represents a generalized expectancy

According to Rotter (1975) there is considerable empirical evidence to support this formula. If this is so, then it is evident from the formula that, as one's experience in a specific situation increases, the relative importance of one's generalized expectancy goes down and the relative importance of one's specific expectancy increases.

1.1.3 Measures of Locus of Control

Research with the locus of control construct has expanded at a rapid rate and so have the number of scales measuring this construct. It is not possible to describe each of these scales here but, as later in this review research findings derived from some of these scales will be discussed, those measures pertinent to the present study will be outlined.

The locus of control scales can be broadly classified into two types: generalized expectancy measures and goal-specific measures.

1.1.3.1 Generalized Measures

Rotter's I-E Scale

The Internal-External (I-E) scale developed by Rotter (1966) purports to measure an individual's general locus of control orientation. It consists of 23 items and each item consists of two alternative statements, one reflecting an 'internal' belief, the other an 'external' one. The respondent is asked to endorse the statement that most accurately reflects his own beliefs. The individual's score represents the number of times he checks the 'external' alternative, so the lower the score the more internal his locus of control.

Criticisms of the I-E scale have been levelled at its unidimensional nature. Research findings of Mirels 1970, Gurin, Gurin, Lao and Beattie 1969, Lao 1970, Lange and Tiggenmann 1981 have strongly argued for an elaboration

of the I-E dimension. Research findings with the I-E scale also suggest that the scale is not, as claimed to be by Rotter, totally free of social desirability response set effects (Feather 1967, Altrocchi, Palmer, Hellmann and Davis 1968, Berzins, Ross and Cohen 1970), mood response bias (Lamont 1972, Lamont and Brooks 1973) and sex differences (Feather 1967, 1968).

Levenson's I, P, C Scales

Levenson's I, P, C (Internal, Powerful Others and Chance) Scales (1974) were designed as a reconceptualization of Rotter's I-E Scale. Questioning the conceptualization of locus of control construct as unidimensional, Levenson (1973, 1974, 1975) has argued for greater distinctions within the external control construct on the grounds that not only are internal beliefs orthogonal to external beliefs but our understanding and prediction can be further improved by studying fate and chance expectations separately from external control by powerful others. Those who believe in powerful others (one external orientation) will behave differently from those who feel that the world is unordered and unpredictable (a second external dimension). Levenson's three dimensions of control therefore refer to beliefs in personal control (Internal Scale), powerful others (Powerful Others Scale), a chance or fate (Chance Scale). Each I, P, C scale consists of eight items in a 6 point Likert format (possible range on each scale 0-48), and the three scale scores are statistically independent of

one another. These I, P, C scales are global measures of locus of control and hence do not allow for high levels of prediction in specific areas such as health.

1.1.3.2 Specific Measures

According to SLT (Rotter 1954) increasing an individual's experience in a given situation will lead to the development of specific expectancies which in turn will play a greater role in determining ones future behavior in that situation than will more generalized expectancies. Hence

"It stands to reason that research whose aim is the prediction of behavior in specific situations could profit from the use of more specific expectancy measures." (Wallston, Wallston, Kaplan and Maides 1976, p.580.)

Specific measures of locus of control have been developed in several areas, including health which is broadly the area of concern in studying the menstrual cycle.

In recent years, health beliefs and behaviors have received a considerable amount of attention as representing a specific area in which to investigate perceptions of control. However, health research studies using global measures of locus of control such as Rotter's I-E scale and Levenson's I, P, C scales have run into considerable difficulties in predicting health-related behaviors. Wallston et al (1976) therefore developed the Health Locus of Control (HLC) Scale and later the Multidimensional Health Locus of Control (MHLC) Scale (Wallston, Wallston and De Villis 1978).

Health Locus of Control Scale (HLC)

The HLC scale is an area-specific unidimensional measure of expectancies regarding locus of control developed for the prediction of health-related behavior. (Wallston et al 1976.) The scale consists of 11 items rooted on a 6 point scale of (1) "Strongly Disagree" to (6) "Strongly Agree". Congruent with most other locus of control measures, the HLC is scored so that high scores indicate agreement with externally worded beliefs.

Individuals are classified as externals or internals by median splits on the HLC. Individuals with scores above the median are labelled as 'health externals', they are presumed to have generalized expectancies that their health is governed by forces beyond their control such as chance, fate or powerful others. Individuals scoring below the median are deemed to be 'health internals' who believe that they can determine whether they become or stay healthy or sick. The HLC has a claimed alpha reliability of .72, and a correlation of $-.01$ with the Marlowe Crowne Social Desirability Scale which indicates that the scores do not reflect a social desirability bias. Concurrent validity of the HLC was initially evidenced by a $.33$ correlation ($p < .01$) with Rotter's I-E scale for the original sample (Wallston et al 1976). This moderate sized coefficient suggests that the HLC shares some common meaning with the I-E Scale, but that the two scales are measuring different phenomena as well. As stated above, the HLC scale measures generalized

reinforcement expectancies for health whereas the I-E Scale measures global reinforcement expectancies.

The Multidimensional Health Locus of Control Scale (MHLC)

In 1978 Wallston, Wallston and De Villis reconceptualized health locus of control along multidimensional lines as suggested by Levenson, and developed a new scale called the Multidimensional Health Locus of Control Scale. The MHLC has two equivalent forms (A and B) each consisting of three, 6 item scales which measure three distinct dimensions: Internality (IHLC); Chance Externality (CHLC) and Powerful Others Externality (PHLC). The scale has the same 6 point Likert format as the HLC scale. For the original sample, the alpha reliabilities of the MHLC scales ranged from .67 to .77 and when Forms A and B were combined into a 12 item scale, the reliabilities ranged from .83 to .86.

Concurrent and discriminant validity of the MHLC scales were established by correlating the MHLC scale with Levenson's I, P, C scales. The intercorrelation between the two sets of scales were such that each MHLC scale correlated most highly with its theoretical counterpart on the Levenson scale (Wallston et al 1978).

1.1.4 Locus of Control and Health

The relationship between locus of control and health is now emerging as an important area in locus of control research. Issues of control are especially relevant to health-related attitudes and behaviour, since

many health actions depend on voluntary behaviours and many health programmes are predicated on an assumption of controllability (Kirscht 1972).

Research relating the locus of control construct to health behaviours and perceptions, has shown some promise in predicting and explaining such specific health-related behaviours as adoption of sick role behaviours, use of preventive measures, development of addictions or habits, adherence to medical regimens, coping with illnesses, and recovery from disease processes and accidents (Levenson 1981, Wallston and Wallston 1978). How, then, does locus of control affect the course of illness or its avoidance?

Strickland (1978) states:

"The findings from a broad range of studies demonstrating a generally greater adaptive functioning for those persons holding internal as opposed to external expectancies (Strickland, Note 1, Note 2) have clear implications with respect to health" (p.1192). However, the relationship between locus of control and health is complex, and contradictory evidence has been presented which, in some instances, could indicate that it is more functional to hold external beliefs (Wallston and Wallston 1978).

1.1.4.1 Research Evidence Relating Health and Locus of Control

According to Strickland (1973 as cited by Levenson 1981), "There is evidence to suggest that people who feel

that reinforcements are contingent upon their own behaviors are more likely to use preventive and ameliorative measures to facilitate health and recovery" (p.37).

Specific behaviours where locus of control is relevant include seeking information, taking medication, making and keeping physician appointments, maintaining a diet, and giving up smoking. Overall, the results from studies relating health-related behaviour to locus of control suggest that generally it is more functional to hold internal beliefs although contradictory evidence has been presented. (Wallston and Wallston 1978.)

Pain and Locus of Control

Does the concept of controllability in terms of locus of control have relevance to the expression of pain? According to Chernovetz, Jones and Hansson (1979), the pain experience is subject to complex interactions of many variables. It has been shown that both the perceived intensity of and tolerance for painful stimuli are affected by factors such as age, race, family size, predictability, attentional focus, expectations, and cognitive rehearsal (Weisenberg M., 1975).

A number of experimental studies have investigated the relationship between the experience of aversive events (including pain) and perceptions of control over them. An important finding in the experiment and literature on aversive events concerns the mediating role of perceived control (Averril 1973). Bower (1968), in his experimental study, found that one variable engendering anxiety about

pain and contributing to the degree of reactive pain was a perceived lack of control over present and potential stressors. He also found that subjects who characteristically view themselves to be in control of significant reinforcers, when placed in situations that they perceive themselves as having no control over, perceive these situations to be aversive. Pennebaker, Burnam, Schaeffer and Harper (1977) conducted two experiments to investigate the role of lack of control in determining the extent to which individuals report experiencing physical symptoms. They conclude that their investigations clearly implicated experimentally induced lack of control as a cause of reported physical symptoms. A greater number of symptoms were reported by subjects in the "no control" conditions.

Coyne and Peck (1975) found that control affects pain and mood scores as a function of outcomes associated with control. When an individual perceived that he had control over aversive events and exercised that control, then his perception of the aversive event was positively affected (pain scores decreased and mood scores improved). However, perception of control without positive feedback shifted scores in the negative direction. Another interesting finding in this study was the interaction between internal and external locus of control orientation and perception of control (as defined in the Coyne and Peck experiment). Internal/external locus of control in conjunction with perception of control influenced the subject's report of the pain experience such that external groups displayed lower pain scores when given control

(control condition) and an increase in pain scores when no control was given (no control condition); while neither condition caused a significant difference with internals.

According to Coyne and Peck this finding is opposite to what might be predicted. However the explanation may be in the operational definition of control employed in this study. The "control" condition consisted of teaching half the subjects a 'pain control technique' (muscular relaxation) accompanied by information about the effectiveness of this procedure for controlling pain. The "no control" group were given no training or information. If internal locus of control subjects typically perceive themselves as having personal control over their environment, then in the "no control" condition, even though they were not taught or provided with any means of control by the experimenter, they may still have perceived themselves as having control and hence there was no significant difference in the pain and mood scores in the two conditions. On the other hand, externals are typically described as viewing their environment as beyond personal control and would bring these expectations to the "no control" condition. However in the "control condition", externals, when provided with a means for reducing pain, were more likely to change their expectations and to perceive themselves as having some control over their present environment. Hence they experienced less pain and a more positive mood.

Taken together, the experimental literature on the relationship between aversive events, and pain in

particular, and perceptions of control would suggest that if an individual perceives himself as having control over an aversive/painful event then his perception of that event is likely to be more positive and he is likely to report experiencing less pain than one who perceives himself as having no control.

The experimental literature on pain has been developed largely using potentially harmful experimental stimuli, such as shock or loud noises, while the clinical literature relies primarily on pain resulting from illness or surgery, and the results from the latter are equivocal and difficult to interpret. Skevington (1979) studied Pain and Locus of Control using Levenson's I, P, C scales. She sought to evaluate the importance of a person's beliefs about his/her abilities to control events, beliefs about the controlling power of others, and actual controlling behaviour with a view to evaluating the contribution of social-psychological processes in the alleviation of pain. She compared three groups of pain patients, arthritics, psychosomatics, and low back pain patients, with adult controls and student controls. She found that there were no differences between pain and control groups on the I scale, which went against her hypothesis that pain patients would have a lower internal loci of control. She also found no differences between pain and control groups on the powerful others scale, but the two groups differed significantly when chance was examined. Thus the hypothesis that pain patients would have higher externality than

controls was only confirmed on the chance dimension of the locus of control scale.

Levenson (1981) found that the response of chronic pain patients to the I, P, C scales was not significantly different from that of normal samples. She therefore developed locus of control scales specifically related to pain control in order to ascertain if pain-related measures would be more successful than generalized measures in delineating the relationship between control expectancies and pain. According to Levenson, preliminary results reveal that chronic pain patients believe that others are more in control of their pain than they are and hence these individuals tended towards a more external orientation on the Powerful Others dimension.

It is commonly accepted that psychological factors play a major role in an individual's perception of pain. Both anxiety and depression have been associated with complaints of pain (e.g. Spear 1967, Sternbach R. 1974). Several studies (e.g. Ambranovitz 1969, Procuick, Brien and Lussier 1976, Costello 1982) have reported an association between externality and depression. Seligman's 'Learned Helplessness' model postulates non-contingency of control as providing the antecedents of depression in humans. (Seligman and Miller 1976.) According to Seligman (1974), reactive depression in humans is essentially a state of learned helplessness, characterized most notably by the perception of no control. However, although the concept of control is central to both helplessness and internal-external studies, the definitions of the terms, differ. In

helplessness research, control refers to the experimenter actually arranging events so that they occur independent of the nature or pattern of responding; in internal-external construct studies control refers to perceptions of actual events (Hiroto 1974, p.188).

Overall the research findings suggest that perceiving oneself to be in control of one's environment results in greater pain tolerance and fewer negative effects but contradictory evidence has been presented which in some instances indicates that it is more functional to hold external beliefs. The lack of consistent findings may relate to differences in, or problems with, the measurement of locus of control (the use of global measures instead of specific ones), or failure on the part of investigators to consider other variables which modify the influence of locus of control beliefs (e.g. value of health, motivation, social supports, previous behaviours).

One can conclude from the above review that the concept of locus of control aids our understanding and explanation of health behaviours and perceptions particularly the experience of pain and negative mood states such as anxiety and depression. It therefore seems reasonable to expect that it might also contribute to an understanding of menstrual distress.

1.2 MENSTRUAL CYCLE

1.2.1 Introduction

Menstrual distress is a relatively common health problem for women and yet very little is known about the mechanisms underlying it. One probable reason for the dearth of information is that it is an extremely complex somatopsychic process involving hormonal, bio chemical and psychosocial elements (Gough 1975). To date, a great deal of emphasis has been placed on the somatic (hormonal and bio chemical) factors of menstrual distress. Although hormone levels fluctuate over the menstrual cycle these 'fluctuations' do not account for all or even most of the variance in symptoms. Hence one has to consider the role of other variables (psychological and social) which moderate the effects of biological fluctuation on symptom formation.

In this section, a brief review of the various research and clinical approaches to the menstrual cycle will be presented as well as an account of the physiological changes that occur during the cycle. However, as the physiological correlates of menstruation have been well documented, a greater emphasis will be placed on the social and psychological factors that affect the menstrual experience.

1.2.2 Directions to Research on the Menstrual Cycle

Approaches to menstrual cycle work have included viewing the cyclical phenomena within the context of bio-

rhythms (Bell, Christie and Venables 1975), treating both the physical and psychological symptoms associated with the cycle as a medical problem (Greene and Dalton 1954, Dalton 1964) and an occupational hazard (Dalton 1970, Redgrove 1971), and studying the cycle from a social and psychological perspective.

In physiological research the menstrual cycle has been considered within the general context of bio-rhythms, and many of the physiological mechanisms underlying the human menstrual cycle have been reasonably well defined (Bell et al 1975). However the physiological explanation of menstruation is not able to account fully for the variations in reported menstrual experience.

Pioneering work in studying the cycle as a medical and occupational problem has been done by Dalton, and within the cycle the "premenstrual syndrome" has been recognized as a major clinical entity. Dalton's "raging hormones theory" (1964) as it has been called, links the mood changes, water retention, and other physical and psychological phenomena associated with the menstrual cycle during the premenstrual period to an insufficiency of progesterone during that time. Dalton maintains that the majority of women not only experience negative affective and somatic symptoms but are also likely to experience a noticeable decrement in performance capacity to some point in the paramenstrum (i.e. the period comprised of four days preceeding and four days following the onset of menstrual flow).

A position contrasting with Dalton's view considers the alleged effects of the menstrual cycle to be highly overrated, and maintains that any observed cyclic changes in behaviour are attributed not to the menstrual cycle per se but to menstrual taboos, folklore, mythology, and cultural stereotypes (Paige 1971, 1973, Ruble 1977).

Sommer (1973), in reviewing task performance and the menstrual cycle, has provided support for this view. She found no systematic relationship between cycle phase and performance. Jensen (1982) conducted a very comprehensive study of the menstrual cycle effects on task performance, and on the basis of her findings states:

"The menstrual cycle effects on performance capacity are not, and should not be expected to be, an all-or-none phenomenon. Some behaviours will show definite cyclic variation, others will remain completely untouched, while variation in still others will be mediated by the organismic and/or situational condition. Such is the pattern typical of stressor variables. The question then, becomes not one of ascertaining "whether" the menstrual cycle alters behavior, but "what" behaviors it alters - or, correspondingly, does not alter - in what direction it alters them, and "why" (p.176).

Menstruation is a social and psychological as well as a physiologic event.

"To date there is no empirical evidence to justify the assumption that the specific affective changes

experienced during the menstrual cycle occur in direct response to specific biochemical changes" (Paige 1971, p.516).

Work on the relationships between the menstrual cycle and social and psychological phenomena has focussed on the effects of the cycle on sexual feelings (Benedek and Rubenstein 1939, Diamond, Diamond and Mast 1972); personality factors and menstrual distress (Gough 1975, Hain, Linton Eber and Chapman 1969, Copper and Kessel 1963); the myths and taboos surrounding menstruation, attitudes towards menstruation, cultural beliefs about menstruation and there effects on reported menstrual experience (Parlee 1974, Brooks, Ruble and Clarke 1977, Ruble 1977).

1.2.3 The Physiology of the Menstrual Cycle

In all females of child bearing age the menstrual cycle consists of a series of physiological events that are related to the process of reproduction. This chain of physiological events starts some time during puberty when there is a discrete change in the levels of sex hormones circulating in the female blood stream. The sequence of physiological and hormonal events which comprises the menstrual cycle begins with the development and maturation of an ovum in the ovaries and continues with its expulsion from the ovary. This is followed by the development of the corpus leuteum and the growth of the endometrium in the uterus which, if pregnancy occurs, will develop into the placenta. If pregnancy does not ensue, the cycle ends with menstruation. The corpus leuteum regresses and the endo-

metrium degenerates and is expelled from the body with the menstrual flow. These physiological changes are controlled by hormones released from the pituitary and ovaries during various phases of the cycle.

Menstrual Cycle Phases:

The menstrual cycle has two main events, ovulation and menstruation, which have been further divided into four phases on the basis of physiological and hormonal changes occurring within the cycle: Ovulation has been divided into the pre ovulatory and ovulatory phase and menstruation has been divided into the premenstrual, and menstrual phase.

The preovulatory phase is the follicle ripening phase during which the ovarian follicles ripen under the influence of the follicle-stimulating hormone (FSH) released from the pituitary gland. In every cycle, a number of follicles develop but only one (occasionally two) will reach the Graafian (mature) stage. As the follicles mature oestrogen is secreted and it performs three functions at this stage of the cycle: it inhibits the release of FSH; it stimulates the release of the luteinizing hormone (LH) from the pituitary, and it stimulates the development of the endometrium.

The next phase of the cycle is the ovulatory phase which refers to the expulsion of the ovum from the ovary, followed by the development of the corpus luteum in the ovary. The corpus luteum serves as a temporary endocrine organ and secretes progesterone which, in conjunction with some oestrogen, prepares the endometrium for the fertilized

ovum. If fertilization does not occur, the corpus luteum regresses and the premenstrual phase starts. The regression of the corpus luteum is accompanied by a sharp reduction in the secretion of oestrogen and progesterone, which leads to the degeneration of the endometrium and menstruation.

During the menstrual phase fragments of endometrium are cast off along with blood and what is left of the decayed egg cell. At menstruation, estrogen and progesterone production reach their lowest points, and during the first day or two of flow the hormone system is relatively quiet. However withdrawal of oestrogen and progesterone removes the inhibitory influences on the pituitary, which once more secretes FSH, and a new cycle begins.

Menstrual cycles differ in length and it is quite normal to have cycles as short as twenty days and as long as forty-five, with every kind of variation in between. The typical cycle is presented in the literature as 28 days, the statistical mean when the cycle lengths of thousands of women were averaged. (Weidgai 1977, Bell, Christie, Verables 1975.)

Just as cycle lengths vary, so does the experience of menstruation. Physical, emotional, and behavioral changes have been tied to the cyclic pattern of sex hormone activity but the nature of the associated behavioral and emotional changes is still a subject of considerable debate. (Parlee 1973, Ruble 1977.)

Clinical observation and some empirical evidence indicate that some women experience physical and emotional menstrual-related distress. However, the fact that not all women experience menstrual discomfort underscores the diverse nature of the variables that affect menstrual experience and the potential for interactions of physiological, psychogenic, and cultural variables (Chernovetz et al 1979).

1.2.4 Assessment Techniques

1.2.4.1 Assessment of Attitudes towards Menstruation

Measures used to assess and explore the range of attitudes and expectations associated with the menstrual cycle include semi-structured interviews (Whisnant and Zegans 1975), sentence completion tasks and biographical questions (Koff, Rierdan and Jacobson 1981), and rating scales (Brooks, Ruble and Clark 1977).

Menstrual Attitude Questionnaire (MAQ)

The MAQ, developed by Brooks et al 1977, presents the only available standardized format for assessing menstrual-related phenomena. The scale consists of 33 statements constructed to represent five attitude factors that are labelled as follows:

Factor I: Menstruation as a psychologically and physically debilitating event.

Factor II: Menstruation as a bothersome event

Factor III: Menstruation as a natural event

Factor IV: Anticipation and Prediction of the Onset of Menstruation

Factor V: Denial of any Effect of Menstruation

Factor VI: Embarrassment about Menstruation.

The items are rated on a 7 point scale ranging from 1 = "disagree strongly" to 7 = "agree strongly". Three different forms of the MAQ (for women, for men, and for adolescents) are available, and although there are minor differences in the wording of the items to suit age and sex, the basic content of the items is the same.

1.2.4.2 Assessment of Menstrual Symptomatology

Prior to the development of the Moos Menstrual Distress Questionnaire (MDQ), (Moos 1968), there were no standardized instruments available to assess the physical, psychological, and emotional changes associated with menstruation. Several scales used to measure anxiety or depression in the general population, such as the Minnesota Multiphasic Personality Inventory (MMPI) and the Beck Depression Inventory (BDI), were used, or adapted for use, when studying the menstrual cycle (Persky 1974; Beamont, Richards and Gelder 1975). Prior to 1968, researchers such as Altman, Knowles and Bull 1941; Coppen and Kessel 1963 and Sutherland and Stewart 1965, developed and used their own individual checklists for rating menstrual symptoms, and many of the differences in results obtained in these studies were due in part to differences in the data collection methods.

In 1968 Moos developed the Menstrual Distress Questionnaire as he felt the need for a standard method to collect cross sectional and longitudinal information on menstrual cycle symptoms. A standardized technique enables one to estimate the prevalence and severity of symptoms in various populations, and allows for a more careful study of the psychological and biochemical correlates of different types of menstrual and pre-menstrual distress.

Menstrual Distress Questionnaire MDQ

The MDQ is a rating scale developed specifically to assess changes in relation to menstruation. It consists of a list of 47 symptoms which might be associated with a women's menstrual cycle and each is rated on a six point scale ranging from "no experience of the symptom" to "an acute or partially disabling experience of the symptom". The questionnaire has two forms: On Form T, each symptom is rated according to its presence on the day of completing the scale, and Form A requires a retrospective account of symptoms at specific points during the most recent menstrual cycle.

The MDQ was initially completed by a sample of 839 women (wives of graduate students) at a large US university, and the 47 symptoms were intercorrelated and factor analyzed, yielding 8 symptom clusters. These have been labelled pain, concentration, behavioural change, autonomic reactions, water retention, negative affect, arousal, and control.

The pain scale reflects symptoms usually associated with dysmenorrhea, whereas the negative affect scale reflects symptoms generally associated with the premenstrual tension syndrome. The water retention and behaviour change scales measure familiar groups of symptoms that are frequently discussed in the literature. The concentration and automatic reaction scales were included because the items on these scales appear to fit in with the symptoms usually associated with menstrual distress. The arousal scale indicates "positive" feelings that several investigators have reported are experienced by some women during menstruation. The control scale, however, is composed of items that have a very low frequency of endorsement and it serves as a check. High scores on this scale may reflect a general tendency to complain of a variety of symptoms, irrespective of whether or not they are usually associated with the menstrual cycle (Moos 1977).

The statistical and psychometric characteristics of the MDQ are reported in the Menstrual Distress Questionnaire Manual (Moos, 1977). Internal consistencies (Kuder Richardson formula²⁰) for each of its eight subscales range from .53 to .89 for Form A and from .63 to .94 for Form T. However the Kuder-Richardson formula is applicable to tests whose items are scored as right or wrong or according to some other all-or-none system. For tests that have multiple scored items such as the MDQ, coefficient alpha (Cronbach 1951; Novick and Lewis 1967) is a more appropriate measure which Moos could have used. (Anastasi 1976). Markum (1976) reports split half reliabilities of

Form T which ranged from .74 to .98 and test-retest reliabilities that ranged from .26 in the menstrual phase of the cycle to .86 in the intermenstrual phase.

According to Moos (1977), significant cyclic variations in symptom complaints are reported by a large proportion of women but not all. Investigators using Form A (e.g. Campbell 1975, Golub 1976, Sommer 1973) and Form T (e.g. Wilcoxon, Schrader and Sherif 1976, Moos, Kopell, Melges, Yalom, Lurde, Clayton and Hamburg 1969) have generally found significant phase effects in symptom complaints indicating that both Forms A and T are sensitive measures of these effects. It has also been shown that the scores on the eight symptom clusters show no effects of memory or of the particular cycle phase a woman is in when filling out reports of symptom severity (Moos 1968, Rouse 1977).

Parlee (1974) criticizes the MDQ on grounds of lack of data on its external validity as well as unreported characteristics of the normative sample used in its development. According to Parlee, the MDQ manual does not report that nearly half the women in Moos' normative group were taking contraceptives and 10% of the women were pregnant. She believes that this information is vital to the interpretation of the results. In addressing the issue of the methodological soundness of the MDQ, Parlee administered the scale to both male and female college students with instructions to indicate what women experienced during the menstrual cycle. She found that both males and females were in close agreement with one

another about the menstrual experience and concludes that the MDQ may be measuring stereotypic conceptions of menstrual distress or pre-menstrual tension rather than actual psychological states or symptoms experienced.

These criticisms were partly contradicted by Markum's (1976) findings. Markum administered Form T of the MDQ to two groups of women. The Experimental group (n=47) received these neutral instructions:

"Following is a list of symptoms which people sometimes experience. For each symptom choose the descriptive category listed below which best describes your experience with the symptom today." (Markum 1976 p.165.)

The Control group (n=47) received regular MDQ instructions. These two different sets of instructions were given to the experimental and control group to determine if knowledge of the aim of the questionnaire would affect symptom ratings. The Experimental group was also asked at the end of the questionnaire if they were aware of the purpose of the experiment and what variable was being measured. This was done to control for the Experimental S's guessing or otherwise finding out that they were answering a menstrual questionnaire.

Markum found that the altered instructions did not significantly effect MDQ scale scores in any of the three menstrual cycle phases. The Experimental group also did not differ for the most part from the control group, indicating that the women were not answering with a stereotypic view of menstruation but were reporting their actual experiences of symptoms. On the basis of these findings

Markum argues against Parlee's contention that the MDQ measures stereotypic beliefs about menstruation.

While accepting some of Parlee's criticisms about the scale, as well as the shortcomings of self report measures whose weaknesses are well known, the MDQ appears to be psychometrically the best available instrument for studying psychological changes associated with the menstrual cycle.

Menstrual Symptom Questionnaire (MSQ)

Based on suggestions from Dalton's (1969) theory of two types of primary dysmenorrhea, congestive and spasmodic, Chesney and Tasto (1975) developed a questionnaire to differentiate between them. The rationale underlying the development of the MSQ was that if Dalton's two proposed types and their opposing etiological agents exist, and if the two are characterized by different symptoms, then one can differentiate between the two types and tailor therapies to suit each.

The MSQ consists of 25 items, 12 related to spasmodic and 12 to congestive dysmenorrhea. The final item consists of a paragraph describing each type, and subjects are asked to indicate the one that most closely represents their experience. In evaluating each of the 24 symptom descriptions, respondents are asked to indicate the frequency of their experience of each symptom on a scale from 1, "symptom never occurs", to 5, "symptom always occurs". According to Chesney and Tasto (1975), factor analysis of the scale has shown that the MSQ is capable of

differentiating between two types of primary dysmenorrhea. However subsequent analyses of the scale by Webster (1978), Stephenson, Denney and Aberger (1983) have failed to support Dalton's two-type theory. These investigators found that the scale involved a far more complicated factor structure than that proposed by Chesney and Tasto. The pattern of factors suggests that the most constructive way to view symptoms is as either menstrual or pre-menstrual, with several different categories within each (Webster 1978).

1.2.5 Menarche

Menarche, the first menstrual period in a girls' life, is a memorable and significant event for girls as it is the first visible sign that the change to hormonal cyclicity characteristic of a woman's reproductive years has begun. Although menarche is one of a series of biologic events during puberty, it is unique in that it occurs suddenly, without warning, and involves bleeding (Brooks-Gunn and Ruble 1980; Grief and Ulman 1982).

In many societies, the onset of menstruation is marked by elaborate rituals and ceremonies as it is the most discrete event of female puberty, a signpost of physical maturity and fertility. Hence is often imbued with special sociocultural meaning. To some, menarche is thought to be a traumatic and upsetting event (Deutsch 1944; Bardwick 1971; Koff, Rierdan and Jacobson 1981); for others it represents a "hygienic crisis" (Whisnant and

Zegans 1975); and for still others it is a "symbol of sexual maturity" (Conger 1973) and a positive event.

In reviewing the research literature in the area, Grief and Ulman (1982) came to the following conclusions:

- (1) Menarche is a memorable and significant event for girls.
- (2) Frequently the experience of menarche is perceived negatively but there is also a positive result to menarche.
- (3) There are several factors that can reduce the negative effects such as preparation for both physical and psychological events that occur, age at the time of first period, and social and cultural factors associated with the menstrual experience.

1.2.6 Development of Menstrual-related Beliefs

Considerable research with adults indicates that they hold reasonably well-defined beliefs about menstruation, many of which are negative (Brooks-Gunn and Ruble 1980). The menstrual and premenstrual phases have often been associated with physical discomfort, decreased efficiency because of debilitating effects on activities, and increased emotionality.

Clarke and Ruble (1978), and Ruble and Brooks-Gunn (1979) found that general cultural attitudes concerning the negativity of menstruation and the symptoms associated with it are acquired at a young age, and these beliefs were found to be quite similar among boys, premenarcheal girls,

and women. The similarity of the responses of the groups to each other would suggest that to some extent a girl's reported experience of menstruation may be sociocultural.

In a study undertaken by Brooks-Gunn and Ruble (1982), pre- and post-menarcheal girls menstrual-related beliefs and behaviours were examined from a developmental perspective using a cross sectional and longitudinal study. Consistent with findings of adult women, both pre- and post-menarcheal girls held expectations that symptoms vary with cycle phase. Although both groups perceived menstruation as having negative effects, the pre-menarcheal group rated the menstrual experience as more debilitating and expected to experience more severe menstrual and pre-menstrual symptoms. Their post menarcheal counterparts evaluated menstruation as more negative, even though they reported less severe distress and less debilitation than their pre-menarcheal counterparts. Brooks-Gunn and Ruble also found that early symptom expectations were positively related to later reported menstrual distress in the longitudinal sample (i.e. the changing-menarcheal-status group). This suggests that expectations do in part become a self-fulfilling prophecy, and that expectations presented at a time a girl begins to menstruate do affect reported menstrual experience. Ruble (1977) also found that when women were led to believe that they were premenstrual, (when in actual fact they were not), they reported experiencing a significantly higher degree of distress than those who did not.

Paige (1973) found considerable differences between three religious groups (Protestants, Catholics and Jews) in attitudes towards menstruation and sex, and in their levels of anxiety during their periods. She states that these findings provide support for her hypothesis that period blues have social origins.

1.2.7 Attitudes towards Menarche and Menstruation

In previous research all American, studies two types of attitudes have been surveyed, namely attitudes and feelings surrounding the first menstrual period, and general evaluative attitudes about menstruation.

In evaluating attitudes towards menarche, studies have involved cross sectional and longitudinal comparisons of attitudes of pre- and post-menarcheal girls towards menstruation, and retrospective accounts of reactions and memories of the menarcheal experience by women ranging in age from adolescence to 58 years (Grief and Ulman 1982). In general, although the onset of menstruation appears to have elicited negative feelings in many women, there is also a positive integrating result to menarche. Kestenberg (1964 as cited by Grief and Ulman 1982) has suggested that pre-pubertal girls go through a stage of disorganization which is ended by menarche. The onset of menstruation serves as a reference point from which a young girl can organize her experiences.

Whisnant and Zegans (1975) used a semi structured interview to look at attitudes of 35 white middle class girls. They found in their sample, that menarche was treated

as a hygienic crisis rather than a maturational milestone. Koff, Rierdan and Jacobson (1981) gave a sentence completion task and biographical questionnaire to middle and upper class pre-menarcheal and post-menarcheal girls. They found that the post menarcheal girls were the more negative about their reactions to menarche, while the pre-menarcheal girls expected both positive and negative feelings about experiencing menarche and hence were more positive about the change. Ruble and Brooks-Gunn (1982) used a survey methodology to examine girls reactions to menarche, and the subsequent effects of this experience as a function of preparation for, and timing of it. They found that "Girls' reactions to menarche reflected mixed emotional reactions, immediate though not subsequent concern with secrecy, and moderate though not debilitating or restrictive symptomatology. Girls who were unprepared or reached menarche early were more likely than late average maturers to be negative on these measures" (p.1557).

Findings from studies (Shaines 1961, Whisnant et al 1975, Weideger 1976, Logan 1980) using retrospective accounts of women's reactions to menarche parallel results from studies of pubertal girls. The adult women recall their first experience of menstruation in rather negative terms and think of it as an unpleasant experience. Memories of the first period were clear in the minds of most women: almost no subjects said they could not remember when they first menstruated or how they felt at the time (Grief and Ulman 1982).

Studies evaluating general attitudes towards menstruation have mostly found them to be unfavourable. Kovar (cited in Brooks-Gunn and Ruble 1980) studied 151 adolescents and found that the girls viewed menstruation as a monthly reminder of restrictions. In contrast Whisnant and Zegans (1975) reported that the post-menarcheal girls in their sample saw menstruation as "being grown up" and "no great thing". Brooks-Gunn and Ruble (1980) found that almost all the girls in their sample believed that "a girl should act normal during her period"; two thirds believed that "a girl should make an effort not to be crabby during her period", and only one third thought that menstruation was something to be happy about. Overall, the experience was rated rather negatively.

In reviewing the studies there appear to be various inconsistencies and a degree of ambivalence expressed in attitudes towards menstruation. According to Brooks-Gunn and Ruble (1980) these apparent contradictions may in part be explained by the fact that attitudes towards menstruation are not unidimensional but multi dimensional as they found in their study with college women (Brooks, Ruble, Clark 1977). They administered the Menstrual Attitude Questionnaire (MAQ) to 191 women and found that 77% of their sample perceived menstruation as at least slightly positive, one-half perceived it as bothersome and the other half as not bothersome. Most of the women in their sample accepted menstruation rather routinely and did not perceive it as overly disruptive (32% perceived it as slightly debilitating), but at the same time did not deny its

effects. On the basis of their findings these researchers conclude that the college women in their sample perceived the effects of menstruation as relatively minor and accepted them rather routinely. Furthermore they state:

"It appears that beliefs about menstruation are more complex than previously thought, involving differential perceptions of physical versus psychological symptoms and a variety of dimensions of menstrual-related attitudes" (p.297).

1.2.8 Menstrual Distress in Adolescent girls

It has been suggested that the menstrual experience of adolescents differs from that of women over 30, particularly in relation to menstrual and premenstrual mood changes (Golub and Harrington 1981). These researchers conducted a study to determine the presence and magnitude of menstrual cycle mood changes in adolescents (10th and 11th Grade students) using standardized measures of depressed state (DACL, Lubin 1967) and anxiety (STAI, Spielberger, Gorruch and Lusher 1970) and M.D.Q. They found that although the adolescents in their sample did not show increased anxiety or depression on the state measures during either the premenstrual or menstrual phase, they did complain of menstrual distress on the M.D.Q. Significant differences attributable to cycle phase effects were found on most of the symptom scales except the arousal and control scales. The complaints were greatest for the menstrual phase of the cycle and the most troublesome symptom was pain. They also found that

negative affect scores were significantly higher during the menstrual phase than the premenstrual and intermenstrual phases which is in keeping with Moos' (1968) observations that women under the age of 21 experience more symptoms in the menstrual phase whereas older women tend to complain of more symptoms in the foremenstrual phase.

In attempting to account for the discrepancy between the subjects' complaints of mood impairment during menstruation on the MDQ and the absence of such reported mood changes in the state mood scales, Golub et al offer two possible explanations :

- (1) that the subjects were influenced by stereotypic beliefs about menstrual symptoms and hence reported not their own experience but symptoms that they thought to be usually associated with menstruation.
- (2) that the mood complaints in younger women may be secondary to their dysmenorrhea.

They state :

"Perhaps the menstrual pain, which is of physiological origin, results not only in complaints of pain but also in complaints of depression, irritability, and impaired function. Thus, complaints of mood disturbance represent pain derivatives because of a response generalization phenomenon that occurs between pain and the other symptoms. Supporting this hypothesis is Moos' report of significant positive correlations between the pain scale and other scales on the MDQ, notably negative affect, concentration, and behavioral change (Moos, 1969) " (Golub et al 1981, p. 964).

Brooks-Gunn and Ruble (1982) conducted a cross sectional study of 639 public school girls divided among three age-related groups (grades 5-6; grades 7-8; grades

11-12) and as part of the study administered a modified version of the MDQ. They obtained results similar to those of Golub and Harrington (1981). They found that cycle phase effects were significant for all three grade levels except on the control scale, that all groups of girls rated their symptoms as being more severe both menstrually and premenstrually than intermenstrually. They also found that symptom severity increased across the three grade levels and suggest that these age-related shifts may represent physiological as well as social learning changes.

1.2.9. Menstrual Experience and the Pain Experience in General

Menstrual distress is a common health problem among some women with a wide range of both physical and emotional distress being associated with the menstrual cycle. Although the menstrual cycle differs from the typical experience of pain because of associated cultural inhibitions and stereotypes, there are commonalities underlying the menstrual experience and the experience of pain generally.

Chernovetz et al (1979) stressed the importance for understanding the menstrual experience within the perspective of pain and stress research in general, these researchers administered the MDQ to both men and women and asked them to indicate whether they had experienced any of these symptoms. The subjects were just divided into two groups. Half the subjects (males and females) were told that the questionnaire listed symptoms associated with menstruation, the other half were told that the symptoms

were frequent occurrences for college students. Males who were told that the symptoms were related to menstruation were informed that the symptoms also occurred in the general population and were asked to fill out the questionnaire without regard to the origin of the symptoms. They found that men reported experiences similar to women of "so called menstrual symptoms", and both men and women reported less distress when the symptoms to which they responded were labelled as related to menstruation. Hence menstruation is not associated to some unique form of pain and stress. In another study which assessed the effects of predictability on the severity of reported menstrual symptoms, these researchers found that their data was consistent with the general stress literature relating predictability and control over aversive events (Averrill 1973).

Conclusion

The menstrual experience appears to be a very complex phenomena and hence research into the area is riddled with controversies. The fact that not all women complain of menstrual distress, and that there appear to be differences in reported menstrual experience and attitudes across cultures, religions, and age groups, underscores the complexity of the phenomena and the potential for interactions of physiological, psychological, social and cultural factors.

1.3 THE MENSTRUAL EXPERIENCE AND LOCUS OF CONTROL

In reviewing research into the locus of control construct, health was identified as an important area for examining locus of control beliefs. The health locus of control construct has shown some promise in predicting and explaining differences in people's experiences of pain, negative mood states, health-related behaviours and attitudes.

In the review of menstrual cycle research, the importance of understanding the menstrual experience in the context of pain and stress research generally has been discussed and the need to take into account physiological, psychological, social and cultural variables.

1.3.1 Social Learning Theory and the Menstrual Experience

There are several reasons for applying social learning theory, and in particular the locus of control construct, to the understanding and explanation of some of the variance in menstrual experience. "Menstrual Distress represents in part a social learning experience" (Brooks-Gunn and Ruble 1982 p.1567).

Several studies have demonstrated that menstrual symptomatology, attitudes and behaviours reflect at least in part a complex interplay of cultural belief, socialization factors and actual experience (Paige 1973, Ruble 1977, Parlee 1978, Sherif 1980, Brooks-Gunn and Ruble 1982).

According to SLT, increasing an individual's experience in a given situation will lead to the

development of specific expectancies of that situation, and these in turn will play a greater role in determining one's future experiences in it than will more generalized expectancies. Although the menstrual experience falls within the area of health in general it differs in some respects from other health problems because of cultural taboos, inhibitions, mythology and stereotypes associated with it. Hence the application of SLT to the menstrual experience would suggest that people will develop specific expectancies in relation to the menstrual cycle which are likely to influence their experience of menstruation.

1.3.2 Research Relating the Menstrual Experience and Locus of Control

Research relating the Menstrual Experience and Locus of control has generally used global measures of control (namely Rotter's I-E scale) and has produced conflicting results. Heczay (1978), in looking at the relationship between anxiety, locus of control, and dysmenorrhea, found that dysmenorrheal women showed significantly higher trait anxiety ($p < .001$) and more of an external disposition ($p < .01$) than non-dysmenorrheal women. She also looked at the effects of self-regulatory training to reduce dysmenorrhea and other menstrual symptoms, and found that while training itself did not affect locus of control, subjects who alleviated dysmenorrhea shifted towards a more internal disposition.

Ferguson (1980) and Scott-Palmer and Skevington (1981) found no significant correlation between locus of control scores using Rotter's I-E scale and reported menstrual pain. However De Haas and Van Reken (1979), using the HLC scale, found that female college students with external scores reported more menstrual symptoms than did those students with scores in the internal direction (as cited by Wallston et al 1981).

1.3.3 Critique of Existing Research

Most locus of control research has been based on global measures of locus of control. These measures provide a low level of prediction in novel situations where the individual is not likely to have developed specific expectancies. However with repeated exposure to a situation specific expectancies become important. (Rotter 1954), Rotter, Chance and Phares 1972). The menstrual experience falls within the area of health in general but is unique in some respects. Hence in this situation the individual is likely to develop specific expectancies of control, and these in turn are likely to influence their experience of menstruation. A measure pertaining to perceptions of control in relation to the menstrual cycle should allow for greater prediction in this situation. As Wallston and Wallston state:

"There is no reason for investigators concerned with specific health areas to cease developing highly specific locus of control measures to suit their own purposes" (p236).

Studies relating the menstrual cycle and generalized measures of locus of control however produced inconsistent results. Most of these studies, too, have focussed on only one aspect of menstrual distress, namely menstrual pain and have failed to take into account the wide range of physically and emotional symptoms that may accompany menstruation.

The main focus in the present study is on the menstrual experience of adolescent girls, the development of attitudes and expectations in relation to the menstrual cycle, and the effects of attitudes towards menstruation and expectations about health in general and the menstrual cycle in particular on the adolescent's experience of menstruation. Thus there appear to be several questions that need to be answered and towards which the present research is directed.

- (1) How do health locus of control beliefs and specific expectations about the menstrual cycle in particular relate to a girl's actual experience of menstruation during subsequent menstrual cycles?
- (2) What effect do expectations of control in relation to the menstrual cycle have on an adolescents attitudes towards menstruation.
- (3) What effect do the attitudes they hold have on their perceptions of the menstrual experience?
- (4) How does age at menarche relate to later reported menstrual distress?

- (5) What effect does length of experience with menstruation have on attitudes towards menstruation and the menstrual experience?
- (6) How does this study on the menstrual experience, menstrual related attitudes and health locus of control beliefs of adolescents compare with those done with older women?
- (7) How does an Australian group of adolescent girls compare with a similar age group in America? Are there any cultural differences in attitudes and reported experience of menstruation?

PART 2 - The Research Project

The project reported here was designed to investigate the relationship between locus of control and the menstrual experience in adolescents. It is a self report survey, the design is basically correlational. As age, age of onset of menarche, and amount of experience with menstruation, are likely to affect reported experience and attitudes towards menstruation it was decided to select girls from Years 10 and 12 to give an age range of 14 to 18 years.

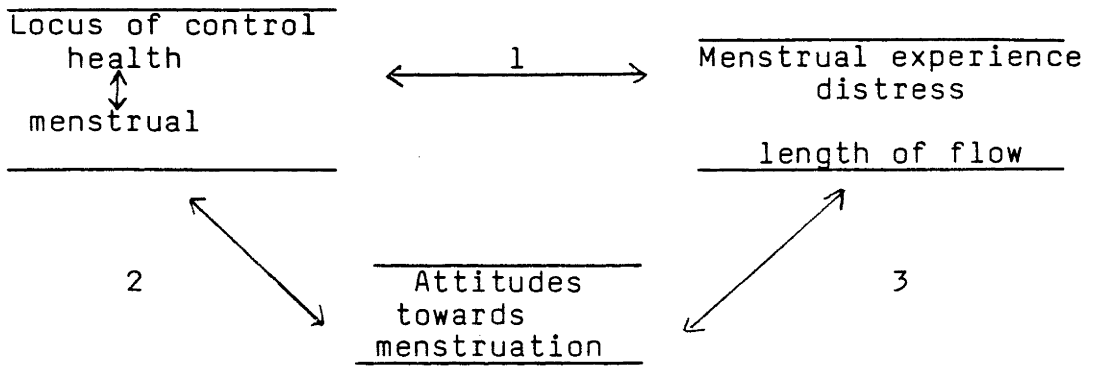
2.1.1 HYPOTHESES

The main aim of this study is to examine the relationship between locus of control and the menstrual experience in adolescents. As stated earlier, the menstrual experience falls within the area of health and hence to trace the development of menstrual locus of control beliefs, one must look at health locus of control beliefs in general.

Health locus of control is a generalized expectancy measure of health - related beliefs, and it seems likely that these beliefs are fairly well developed by the time the adolescent reaches menarche. Parcel and Meyer (1978) developed a 20 item (17 externally worded and 3 internally worded) Children's Locus of Control Scale (CHLC) with children aged 7 to 12 years and obtained moderately high internal consistencies (Kuder Richardson) of .72 for the first administration and .75 for the second.

They also found that health locus of control in children was affected by age (CHLC scores tended to become more internal as grade increased, and as the gap between the grades became larger the differences in CHLC scores became more significant), and they suggest that locus of control changes with broad developmental stages.

It has also been shown that premenarcheal attitudes and expectations about menstruation do exist and are related to later reported menstrual distress. (Brooks-Gunn and Ruble 1982). Hence if health locus of control beliefs and premenarcheal attitudes and expectations about menstruation are fairly well established at menarche, they are likely to have an effect on a girls' experience of menarche and subsequent menstrual cycles. These variables (health locus of control beliefs, premenarcheal attitudes and expectations and experience with menstruation) interact reciprocally with one another in a unitary system in which change in any element affects the other components. Following menarche, with repeated experience of menstruation, a more specific set of control expectancies about menstruation might be expected to develop - a menstrual locus of control. This in turn is an element of the system, in reciprocal interaction with the other elements. This system is represented in the diagram below.



Thus we have here a system that can be expected to change over time through feedback from within the system (eg bad period) and from outside it (eg exposure to information about premenstrual tension).

In the present study an attempt was made to examine the relationship between variables within the system. There appear to be several relationships to be examined

- (1) Locus of control and Menstrual Experience.
- (2) Locus of control and attitudes towards menstruation.
- (3) Menstrual distress and attitudes towards menstruation.
- (4) Health locus of control and menstrual locus of control.

Before going on to examine the relationships between the variables, it is necessary to comment on the nature of the locus of control scales. There is an established scale (namely the HLC) to measure health locus of control beliefs, but no menstrual locus of control scale has been developed and tested. Rotter (1975) emphasized the need to develop specific measures of control for

situations where an individual has had a lot of experience. In such circumstances specific expectancies are likely to develop and measuring these would allow for better predictions in that situation than would a more generalized measure. In the light of Wallston et al (1976) suggestions (see page 7) and Saltzer's' (1978, 1979 as cited by Wallston Et al 1981) success with her 4 item weight locus of control scale, the 7 item menstrual locus of control scale was developed for this study to test whether it would better predict menstrual experience than a general health locus of control measure. However the time available for the study precluded establishing the psychometric properties of this scale prior to its use. Hence hypotheses concerning it can only be advanced tentatively.

I. Locus of Control and Menstrual Experience.

a. Menstrual Distress

The review of the research literature on locus of control and health in section 1, has suggested that generally it is more functional to hold internal as opposed to external expectancies (Wallston and Wallston 1978 and Strickland 1978). Perceiving oneself to be in control of one's environment results in greater pain tolerance, fewer negative emotional effects and generally greater adaptive functioning.

Hypothesis 1 Externality as measured on the Health Locus of Control Scale (HLC) and the Menstrual Locus of Control Scale (MLC) is likely to be positively correlated with the

Pain, Negative Affects, Concentration, and Behavior Change Scales of the MDQ. In other words, adolescent girls with an external locus of control orientation are likely to report greater distress than Internals on these subscales. No significant relationship is expected between the Internality - Externality dimension and the Arousal, Autonomic Reaction, Water Retention and the Control (or Complainer) Scale of the MDQ.

b. Length of menstrual flow

Hypothesis 2. Length of menstrual flow will be positively related to externality.

Scott Palmer and Skevington (1980) found that externality (as measured by Rotter's scale) was related to longer periods and internality to shorter periods in adults.

II. Locus of Control and Menstrual Attitudes

Brooks-Gunn and Ruble (1980b) found that women who perceived themselves as experiencing greater distress are likely to have more negative attitudes towards menstruation than those who report experiencing less distress. Externals by definition are likely to perceive themselves as having less control over their menstrual cycle than internals, and have been predicted in Hypothesis I to perceive themselves as experiencing greater distress than internals. If hypothesis I is supported then they are likely to have more negative attitudes towards menstruation than internals.

Hypothesis 3. Externality as measured by the HLC and the MLC will be positively correlated with four of the attitude dimensions on the MAQ, namely

- (1) Menstruation as a debilitating event.
- (2) Menstruation as a bothersome event.
- (3) Menstruation as a predictable event.
- (4) Embarrassment about menstruation and negatively correlated with the attitude dimension "Denial of the effects of menstruation".

No correlation is expected between the Internality - Externality dimension and perceiving menstruation as a natural/positive event.

III Menstrual Attitudes and Menstrual Distress

Brooks, Ruble and Clark (1977) and Brooks-Gunn and Ruble (1980b) found that college women who reported more severe physical and psychological distress (as reflected by their reports of higher symptomatology on the MDQ) were more likely than women who rated themselves low on distress, to believe that menstruation was debilitating and that it could be predicted. These women were also less likely to deny that menstruation effected one's behaviour. Brooks et al also found that perceiving menstruation as a natural event does not negate the bothersome aspects of it. It is expected that these findings of Brooks et al with adult women will be found with adolescent girls.

Hypothesis 4. The greater the perception of menstruation as a debilitating event, and as a predictable event, then

the more likely are girls to report higher symptomatology (ie have higher scores) on all scales of the MDQ except the Arousal and Complainer scales.

Hypothesis 5. The attitude dimension "Denial of the effects of menstruation" will be negatively correlated with all scales of the MDQ except the Arousal scale.

IV Health locus of control and Menstrual locus of control.

Hypothesis 6. There will be a positive correlation between the MLC and the HLC scales but the MLC will be a better predictor of menstrual distress and attitudes towards menstruation than the HLC scale.

2.1.2 MEASURES USED

Locus of Control Scales:

Two measures of locus of control were employed in this study: the Health Locus of Control Scale (HLC) and the Menstrual Locus of Control Scale (MLC) which was developed for the project. The HLC is a generalized measure of health-related beliefs whereas the MLC is a more specific measure of expectancies that an individual might develop in relation to the menstrual experience.

Health Locus of Control Scale:

The HLC is a unidimensional measure of the locus of control construct; it does not make the distinction between external control determined by chance from external control by powerful others. As pointed out earlier Levenson (1973) and Wallston and Wallston and De Villis (1978) believe that it is important to distinguish between the three dimensions (Internal, External-Chance and External-Powerful Others) of locus of control and hence developed the Multidimensional Locus of Control Scale (MHLC). However in this study the HLC was chosen as the research instrument for the following reasons:

(1) The distinction between the External (Chance) and the External (Powerful Others) dimension is of particular importance in studies whose aim is the prediction of behavior, because individuals who believe in a world governed by chance are likely to behave differently from those who believe in a world governed by powerful others. As the main purpose of this study was to examine the relationship between locus of control and the menstrual experience per se, it was felt that this distinction between Chance and Powerful Others would not result in any significant differences in reported experience between the two groups. Girls who believe in a world governed either by chance or by powerful others are both likely to perceive themselves as having no control over the situation and hence experience greater distress than those who perceive themselves as having some degree of control.

(2) Winfield (1982) subjected the MHLC to analysis of its factor structure, internal consistency, test-retest reliability with parallel forms, and its predictive validity, and found that the chance scale showed little stability over time, the internal consistency was low (alpha .49) and only two of the six items in the scale contributed to the factor analysis. She also found no predictive relationships between subscale scores and later health or compliance with medical instructions.

(3) There also appear to be other difficulties with the MHLC. It consists of three subscales and each respondent receives a score on each. This means that persons can, and some do, score above the mean on all three scales. According to Wallston et al (1981), some persons may actually hold such beliefs, others may just be "yea sayers" who will agree with any item regardless of its content. If the former is the case then the whole concept of locus of control becomes meaningless.

To overcome this difficulty Wallston et al (1981) suggest deciding which is the most theoretically relevant MHLC dimension of the three and using only that scale. However they report that they have not had much success with this approach, and it is not always clear which is the best dimension to utilize. An alternative method would be to combine the IHLC and the CHLC scale to form a unitary scale yielding a single score on which to array subjects. This would produce a scale similar to the original HLC which included only one powerful others item. However the CHLC-IHLC scale would not have the added reliability that

is usually found with the longer MHLC scale. A further suggestion given by Wallston et al (1981) is to combine the CHLC and PHLC scales to form an external subscale, but there are only low positive correlations between these two scales. Attempts to develop typologies using IHLC, CHLC and PHLC have met with little success to date. So none of these approaches seems to get round the difficulties presented by the MHLC.

Thus for the purposes of this study, the HLC appears to be the most appropriate instrument. A copy of the test form is on page 109 in Appendix I.

The Menstrual Locus of Control Scale (MLC)

On theoretical grounds, as discussed under the heading 'Menstrual Experience and Locus of Control', a locus of control scale which deals specifically with the menstrual cycle should better predict attitudes and behaviour related to the menstrual cycle than a more wide ranging health locus of control scale. However no such scale has to date been reported in the literature. As Wallston and Wallston (1981) point out.

"There is no reason for investigators concerned with specific health areas to cease developing highly specific locus of control measures to suit their own purposes" (p.237). And they go on and state

"We are no longer even convinced that it is important to use sophisticated scale development techniques after seeing Saltzer's (1978, 1979) success with her 4 item weight locus of control scale compared with Carnahan's (1979) lack of

success with her carefully constructed and developed multidimensional dental locus of control scale" (p.237).

As limited time available for the present project precluded the use of sophisticated psychometric techniques of scale development, 7 items were composed by the author to comprise a MLC scale with which to assess a girl's perceptions of control over her menstrual cycle. Four items are worded externally and three internally, and the scale uses a six point Likert format similar to the HLC. It is scored in the external direction with each item scored from 1 (strongly disagree) to 6 (strongly agree) for the externally worded items and reverse scored for the internally worded ones. The 7 items were written to tap specific expectancies regarding locus of control related to the menstrual experience. They resembled items in various health locus of control scales and were judged to have face validity.

For the sake of convenience and ease in filling out and scoring the questionnaires, these 7 items were added on to the end of the Menstrual Attitude Questionnaire (MAQ). They are items 19 to 25 (see p.112, Appendix I).

The Menstrual Attitude Questionnaire (MAQ)

The Menstrual Attitude Questionnaire (MAQ) is a standardized instrument developed by Brooks, Ruble and Clark (1977) to measure attitudes concerning menstruation. This questionnaire was chosen as it has several advantages. An adolescent form of the scale is available; its alpha coefficients are high, ranging from 0.90 to 0.97 (Brooks-

Gunn and Ruble 1980b); and its standardized format makes it suitable for use in large groups. The scale also provides for a multidimensional conceptualization of menstrual attitudes which is in keeping with findings (Brooks et al 1977; Brooks-Gunn and Ruble 1980b) that attitudes, at least among college women, are not unidimensional.

The adolescent form of the scale has 18 items and six attitude dimensions. The first five are similar to those in the adult form of the scale as described under section 1.2.4.1. The 6th refers to "Embarrassment about menstruation". The adolescent form also differs from the adult scale in that it has a 6 point response scale rather than a 7 point one. As the scale was developed for an American adolescent population, minor changes in wording were made for use with Australian girls. The word "crabby" in item 6 was changed to "irritable". The wording of Item 12 was taken from the adult scale rather than the adolescent one as it was judged more appropriate for the age group of the study.

The Menstrual Distress Questionnaire (MDQ)

Form A of the MDQ was chosen to assess the physical and psychological changes that are thought to occur during the menstrual cycle. The MDQ was chosen over the MSQ because it allows a girl to describe her menstrual cycle symptoms in three phases of her most recent cycle (time of menstrual flow - the menstrual phase; one week before her menstrual period - premenstrual phase; and remainder of the cycle - intermenstrual phase) whereas the

MSQ was designed mainly to distinguish between two types of dysmenorrhea. According to Webster (1978), the most constructive way to view symptoms is as either menstrual or premenstrual with several different categories within each.

The MDQ was administered with all 47 items but with slight alterations to wording to include more familiar adjectives for the Australian sample. Two questions were added. These were included in the development of the original questionnaire but not in the Moos Manual (1977). One asked the girl about the regularity of her menstrual cycles in the last 12 months; the other asked whether she had taken any contraceptives during her last menstrual cycle. The questionnaire was also relabelled as the "Menstrual Questionnaire", omitting "Distress" to avoid any negative connotations the word might evoke.

A copy of the questionnaire is printed on page 114 in Appendix II.

2.1.3 SUBJECTS

The subjects were volunteers from Year 10 and Year 12 in two Canberra Girl's schools, both private, one Anglican, one Roman Catholic. 143 girls participated in both testing sessions. Of these, 11 could not be included in the data analysis. One reported that she was an athlete in training and had not had a period this year at all. One girl was Chinese, while all the rest were Caucasian (96.2% - Australian and 3.8% - British/New Zealanders) and it has been found that ethnic differences affect both internal - external control beliefs and menstrual attitudes. Incomplete

and frivolous responses necessitated the removal of nine more sets of questionnaires, leaving a total of 132 respondents.

The age range of the girls was from 14 years 8 months to 18 years 6 months with a mean age of 16 years 5 months. There were 71 girls in Year 10 and 61 in Year 12. The socio economic status of the group was assessed by asking the girls to state the occupation of the head of their household and on the basis of this information it was determined that 85.6% were in professional or managerial positions, 11.4% in clerical and skilled occupations and 3% in semiskilled and skilled occupations. Note this sample is heavily biased towards the upper socioeconomic group and hence is not representative of the Australian population. Locus of control has been shown to be affected by social class (Battle and Rotter 1963) with a tendency towards greater internality with an increase in social status. In the present study however no significant differences in locus of control orientation were found between the three groups.

The girls were also asked to state whether they had any religious affiliations, as Paige (1973) reported differences in attitudes towards menstruation among different religious groups. Out of the 132 girls, 45.5% were Roman Catholic, 40.2% were Protestant and 14.4% fell into the third category (None, Other). In the present study, no differences were found both in attitudes and reported menstrual experience among the different religious groups.

Oral contraceptive use: Of the 132 girls, only 4 reported taking oral contraceptives.

2.1.4 PROCEDURE

The testing was carried out in groups on two occasions, 7 weeks apart, so that each girl could experience at least one complete menstrual cycle between the two sessions.

At the first session the girls were told that the study was a survey of young women's attitudes towards health and menstruation, and their menstrual experience. Each was asked to fill out the Menstrual Attitude Questionnaire (MAQ), the Menstrual Locus of Control Scale (MLC) and the Health Locus of Control Scale (HLC). They were then told that they would later be asked to fill out a questionnaire about their most recent menstrual cycle, and were given a sheet of paper to note the dates of the first and last days of their next menstrual period. If they experienced two periods within the 7 weeks they were asked to note dates of both. The dates for the most recent cycle were used in the analysis. The girls were also asked to note anything unusual in their mood, behavior, or their menstrual cycle. The aim of these instructions was to increase the girls' awareness of their menstrual experiences and thus to increase the accuracy of their responses to the MDQ. The notes they made were not intended to be treated as data for analysis.

At both sessions confidentiality of the exercise was stressed, and the girls were allowed to use fictitious names if they wished. The instructions on the top of the questionnaire were read out, and the response categories were explained using items not included in the standard questionnaire. Each session took 20-30 minutes.

2.2 RESULTS

2.2.1 Analysis of Measures

132 valid records were subjected to various analyses to examine the overall pattern of results. However, before going on to examine the outcome of these, it is necessary to present some background information about the subjects in order to interpret the findings.

The mean age of menarche for the subjects in this study was 12.72 years $SD_{\pm} 1.18$. Similar to the mean of 12.65 years, $SD_{\pm} 1.17$ reported by Zacharias, Wurtman and Schatzoff (1970) for an American sample.

The younger the girls were at menarche the greater their length of experience with menstruation ($r = -.680$, $p = .001$). It will be remembered that Year 10 and Year 12 students were included in the study and length of experience with menstruation showed a wide variation from a minimum of 5 months to a maximum of 7 years and 7 months, with a mean of 4 years and 5 months. The majority (62%) had menstruated for 5 years or less. As most early menstrual cycles are usually anovulatory and regular cycles do not seem to be established for several years, (Brooks-

Gunn and Ruble 1980) it must therefore be assumed that both menstrual locus of control beliefs and menstrual related attitudes and expectations will be in the early stages of development because of limited experience with menstruation.

2.2.1.1 LOCUS OF CONTROL MEASURES

Health Locus of Control Scale

The mean score was 36.30, SD 5.83. A Cronbach alpha reliability coefficient of .58 was obtained for the 11 items of the HLC. Wallston et al (1976) in their original study with college students obtained a mean of 35.57, SD 6.22; and an alpha coefficient of .72. Item analyses of the scale for three subsequent samples of college students resulted in lower alpha reliabilities of .40, .50 and .54 (as reported by Wallston et al 1976). Albino (1980, cited by Wallston et al 1981) also reported low internal consistency coefficients for the HLC scale (.23 - .50) with the lowest figure for eighth and ninth grade school children.

The subjects in the present study were slightly more externally oriented than Wallston et al's college students and this was to be expected given the age difference between the 2 groups. It has already been noted that Parcel and Meyer (1978) with the Children's Health Locus of control scale (CHLC) found an increase in internality with an increase in age. Such an age trend represents socialization practices and children's

experiences of increasing autonomy and responsibility for their own behavior as they pass from childhood to adulthood.

Internal consistency coefficients of the HLC also appear to increase with age. As stated earlier, Albino (1980) obtained the lowest figure for eighth and ninth grade school children as compared to older children and adults. In the present study then, the lower internal consistency coefficient than that obtained in the Wallston et al study could be accounted for by the age difference between the subjects in the two studies. The subjects in the original study were older and had had more experience with health matters in general than the subjects in the present study and hence are likely to have developed a more consistent locus of control orientation.

Menstrual Locus of Control Scale (MLC)

The mean score for the MLC was 24.83, SD 3.62 with a range of scores from 14 to 39. (The 7 item scale has a potential range of 7 to 42). The internal consistency of the scale was very low. Cronbach's alpha coefficient for the total scale of 7 items was only .07. However when the scale was subdivided into externally and internally worded items, the alpha coefficients for the external (4 item scale) was .22 and .39 for the internal (3 item scale). This is surprising as the shorter scales should have had lower reliability coefficients. The fact that higher internal consistency coefficients were obtained when the scale was subdivided into internally and externally worded items may suggest that

- (a) Menstrual locus of control is not a unidimensional concept but a multidimensional one.
- (b) Menstrual locus of control has not as yet been developed as a consistent set of beliefs in this group of adolescents.

2.2.1.2 MENSTRUAL CYCLE MEASURES

Table 1 summarizes background data on the menstrual cycle. Length of menstrual flow (ie the number of days from the onset to the cessation of menstrual flow varied from 3 days (2.3%) to 9 days (3.1%), with the majority of girls (74.6%) reporting flow lengths varying from 5-7 days. These findings are consistent with those of Moos (1968) who reported a mean length of menstrual flow of 5.5 days (SD 2.0) for his group of adult women. However, the majority of women (54.8%) in his sample had regular cycles (ie they were always within ± 2 days of the expected date) and 45% reported a variation of 3 days or more in cycle length during the past year.

In the present study 76.9% of the girls stated that their cycle lengths varied by 3 days or more and for 45% of these, the variation was always within $\pm 3-6$ days of the expected date. The fact that the periods of the adolescent girls in this study were not as regular as those of the adult women in Moos' study indicates that a significant proportion have not as yet settled into a regular pattern.

As stated earlier, according to Brooks-Gunn and Ruble (1980) regular cycles do not seem to be established for several years after menarche. In a retrospective study of a large number of girls, Zacharias et al (1970) found that regular cycles take an average of 14 months to be established. Zacharias et al do not provide any definition for what they meant by regular, all they did was ask their subjects to state the age at which menses became regular. Further on in the same article they also go on to state that age at onset of regular menstruation shows large variation and is more variable than age of menarche. In the present study, the mean length of experience with menstruation was about 4 years, and in spite of this a large majority of the subjects had not as yet established regular cycles. This discrepancy suggests that there may be cultural differences which determine the menstrual experience of adolescent girls in Australia and America.

The fact that menstrual cycles have proved to be much less regular than those anticipated on the basis of American findings means that the learning experiences of the girls in the present study have not yet been conducive to the development of consistent attitudes or locus of control beliefs in relation to the menstrual cycle. It is therefore not surprising that they have given somewhat inconsistent answers on some of the measures used, as indicated by the low internal consistency coefficients.

Table 1 Background Data on Menstrual Cycle Variables

	Mean	SD	Range
1. Length of menstrual flow (days)	6.13	1.31	3-9
2. Regularity of the menstrual cycle during the last 12 months			
(a) Always within \pm 2 days	= 29%		
(b) Always within \pm 3 days	= 45%		
(c) Always within \pm 1-2 weeks	= 13.7%		
(d) Varied more than 2 weeks	= 12.2%		

The Menstrual Distress Questionnaire (MDQ)

The 47 symptoms in the MDQ group together to form eight symptom subscales (See Table 2). The total distress score was calculated for each subject by adding together, scores on the eight scales across the 3 phases. Scores for each phase (ie menstrual, premenstrual and intermenstrual) were also calculated by adding together the scores on all 47 items in each of the three phases. The means and standard deviations for the eight scales in each phase of the menstrual cycle are shown in Table 3.

All scales (except the Arousal scale) showed higher mean scores in the menstrual than in the premenstrual phase of the cycle and the most troublesome symptoms were pain and negative affect.

Moos (1968) found with a group of adult women that the Pain, Concentration, Behavior Change and Autonomic Reaction scales showed higher mean scores in the menstrual than in the premenstrual phase, whereas the Water Retention, Negative Affect and Arousal scales showed higher mean scores in the premenstrual than in the menstrual phase. Golub et al (1981) with a group of adolescent girls aged 15-16 years, found significant differences attributable to cycle phase on all except the Arousal and Complainer scales of the MDQ. Complaints were greatest for the menstrual phase of the cycle, and the most troublesome symptom was pain. Golub et al also found that negative affect scores during the menstrual phase of the cycle were significantly higher than both the premenstrual and intermenstrual scores. This finding is in contrast to

Table 2 Eight Symptom Scale Groups

PAIN

- 5. Muscle stiffness
- 9. Headache
- 16. Stomach cramps
- 22. Backache
- 25. Fatigue
- 37. General aches and pains

CONCENTRATION

- 2. Insomnia, sleep disturbance
- 6. Forgetfulness
- 7. Confusion
- 24. Poorer judgement than usual
- 29. Difficulty in concentration
- 33. Distractible
- 35. Accidents
- 42. Lowered motor coordination, more clumsy

BEHAVIOR CHANGE

- 4. Lowered school or work performance
- 8. Take naps, stay in bed
- 15. Stay at home
- 20. Avoid social activities
- 41. Decreased efficiency

AUTONOMIC REACTIONS

- 17. Dizziness, faintness
- 23. Cold sweats
- 26. Nausea, vomiting
- 28. Hot flushes

WATER RETENTION

- 1. Weight gain
- 10. Skin disorders
- 30. Painful breasts
- 34. Swelling

NEGATIVE AFFECT

- 3. Crying
- 11. Loneliness
- 21. Anxiety
- 27. Restlessness
- 36. Irritability
- 38. Mood swings
- 40. Depression (feeling sad or blue)
- 45. Tension

AROUSAL

- 13. Affectionate
- 14. Calm
- 18. Excitement
- 31. Feelings of well-being
- 47. Bursts of energy, activity

CONTROL

- 12. Feelings of suffocation
- 19. Chest pains
- 32. Ringing in the ears
- 39. Heart pounding
- 43. Numbness, tingling
- 46. Blind spots, fuzzy vision

1 The MDQ item numbers are given for each item.

Table 3 Means and Standard Deviations for the Eight Symptom Scales of the MDQ in each phase of the Girl's most recent Menstrual Cycle.

Scales	Menstrual	Premenstrual	Intermenstrual
<hr/>			
1. Pain			
X	15.59	12.04	9.18
SD	6.79	5.82	4.15
2. Concentration			
X	13.73	12.07	10.76
SD	5.95	4.97	3.92
3. Behavior Change			
X	8.90	7.09	6.47
SD	4.30	2.77	2.38
4. Autonomic Reactions			
X	6.13	4.97	4.58
SD	3.26	2.40	1.47
5. Water Retention			
X	7.88	7.53	5.49
SD	3.47	3.40	1.87
6. Negative Affect			
X	20.00	18.16	12.65
SD	9.03	8.75	6.59
7. Arousal			
X	8.56	8.75	9.64
SD	3.78	4.05	4.85
8. Complainer			
X	8.01	7.43	6.92
SD	3.24	2.57	1.71

studies of older women (Moos 1968) where negative affect scores were higher in the premenstrual phase than in the menstrual phase.

The results obtained in this study are shown in Table 4 and are similar to those of Golub et al (1981). The eight scales of the MDQ show statistically significant differences ($p \leq .001$, Wilcoxon Matched-Pairs Signed Ranks Test) attributable to cycle phase, with the greatest number of complaints being reported for the menstrual phase of the cycle. It was also found that negative affect scores with this group of adolescents were higher in the menstrual phase than in the premenstrual phase. The Arousal scale score (which deals with positive feelings in relation to the menstrual cycle) however, was highest during the intermenstrual phase. Moos (1968) and Golub et al (1981) found that each of the first six scales of the MDQ showed a significant cyclical variation, whereas the Arousal and Complainer scales did not. Some women however did complain of symptoms on these scales, which may reflect a general tendency to complain of a variety of symptoms irrespective of whether or not they are usually associated with the menstrual cycle (Moos 1977).

In this study scores on all eight scales (including the Arousal and Complainer scales) showed cyclical variations. This suggests that the girls may have been giving stereotypic responses to the items on the scale.

Table 4 Comparisons between cycle phases (ie menstrual with premenstrual, menstrual with intermenstrual, premenstrual with intermenstrual) and the eight symptom scales of the MDQ during the three phases.

Wilcoxon Matched Pairs Signed Ranks Test - Z score				
Menstrual with Menstrual with Premenstrual with				
Premenstrual Intermenstrual Intermenstrual				
Phases	- 6.381 **	- 9.409 **	- 7.139 **	
<u>Scales</u>				
1 Pain	- 7.623 **	- 9.117 **	- 6.066 **	
2 Concentration	- 5.337 **	- 7.432 **	- 4.560 **	
3 Behavior Change	- 6.571 **	- 7.017 **	- 3.178 **	
4 Autonomic Reactions	- 5.725 **	- 6.551 **	- 2.952 **	
5 Water Retention	- 1.466	- 7.646 **	- 6.454 **	
6 Negative Affect	- 3.247 **	- 9.002 **	- 7.904 **	
7 Arousal	- 0.892	- 3.569 **	- 3.710 **	
8 Complainer	- 3.229 **	- 5.060 **	- 2.894 **	

** Significance < 0.005

Reliability : Cronbachs' alpha coefficients (presented in Table 5) for the Full Scale (ie across the three phases of the most recent menstrual cycle) ranged from .89 for the Negative Affect Scale to .47 for the Water Retention Scale. The average of the internal consistencies were calculated separately for the menstrual and premenstrual phase for the eight scales as suggested by Moos (1977), to compare the results in this study with those reported by him in 1977. The average internal consistencies in the present study ranged from .86 for the Negative Affect Scale, to .50 for the Water Retention Scale. Moos, whose respondents were adult women, reported average internal consistencies calculated in a similar manner for the premenstrual and menstrual phases using Kuder-Richardson Formula 20. He obtained coefficients ranging from .89 for the Negative Affect Scale to .67 and .66 for the Water Retention and Autonomic Reaction scales respectively. Compared with those in the present study, Moos obtained higher internal consistency scores for the Concentration, Behavior Change, Water Retention, Negative Affect and Arousal scales of the MDQ but lower ones for the Pain, Autonomic Reactions and the Complainer scales.

Table 5 Internal consistencies of the MDQ Scales

Cronbach's Alpha Coefficients		
Scales	1	2
Pain	.81	.78
Concentration	.79	.78
Behavior Change	.66	.61
Autonomic Reactions	.74	.72
Water Retention	.47	.50
Negative Affect	.89	.86
Arousal	.75	.63
Complainer Scale	.55	.58

1. Internal consistency coefficients for the Full Scale.
2. Average of internal consistencies calculated separately for menstrual and premenstrual phase subscale scores.

Relationships between Age at Menarche, Length of Experience with Menstruation, Length of menstrual flow, and the MDQ.

Results presented in Table 6.

Positive and significant correlations were obtained between the Pain, Concentration, Negative Affect and Arousal scales and the length of experience with menstruation. This would suggest that as length of experience with menstruation increased so did the number of both positive and negative symptoms reported. Although the correlations with Age at Menarche were not statistically significant except for the Pain scale, they were mainly negative, while those with length of experience were nearly all positive. As the two variables correlate - .680, this pattern of correlations with the MDQ was to be expected. These trends suggest that the older the girls were when they started menstruating, and hence the less experience they had had with menstruation, the lower the distress reported on the MDQ.

Length of flow was also found to be positively correlated with all the scales of the MDQ (except the Arousal scale) which suggests that the longer the length of the menstrual period, the greater the distress reported.

Table 6 Spearman Correlations for Age at Menarche, Length of Experience with Menstruation, Length of Menstrual flow, and the MDQ.

MDQ		Age at Menarche	Experience	Length of flow
Total Distress	- .103		.147 *	.178 *
Menstrual Phase	- .118		.142 *	.203 **
Premenstrual Phase	- .084		.149 *	.166 *
Intermenstrual Phase	- .087		.117	.093
Pain	- .194 **		.158 *	.239 **
Concentration	- .111		.160 *	.091
Behavior Change	- .106		.112	.223 **
Autonomic Reactions	.023	-	.022	.189 **
Water Retention	- .072		.102	.044
Negative Affect	- .095		.152 *	.201 **
Arousal	.001		.155 *	- .087
Complainer	.100	-	.076	.224 **

* significance ≤ 0.05
** significance ≤ 0.01

Menstrual Attitude Questionnaire (MAQ)

The MAQ is made up of six attitude dimensions and descriptive data for each of the six dimensions are presented in Table 7. The percentage of subjects agreeing or disagreeing with each attitude dimension was calculated as suggested by Brooks et al (1977). The means for each dimension range from 1 to 6 and these were calculated for each dimension. An average of less than 3.99 on a dimension is described by Brooks et al as disagreeing with the dimension and an average of over 4.00 is taken as agreement with it.

The mean scores for three of the five dimensions, I, II and IV which see menstruation as an event which is psychologically and physically debilitating, bothersome, or predictable respectively, are slightly higher than those reported by Brooks-Gunn et al (1980b) for a group of American adolescents. The mean scores for menstruation as a positive event and denial of the effects of menstruation were lower than those reported by Brooks-Gunn et al. These authors provide no data for the sixth attitude dimension 'Embarrassment about menstruation'. Thus on all 5 dimensions this group of Australian adolescents showed more negative attitudes towards menstruation than did the adolescents in the American study.

Table 7 Summary Statistics for the Six Dimensions of the MAQ

Dimension	Mean (N=132)	SD	% Subjects agree	% Subjects disagree	Alpha Coefficients
I. Debilitating	3.77	0.93	34.8	65.2	.41
II. Bothering	4.59	0.96	68.9	31.1	.74
III. Positive/Natural	3.87	0.76	43.9	56.1	.29
IV. Predicted and Anticipated	4.25	1.11	54.5	45.5	.26
V. Denial of effect	2.97	0.89	6.1	93.9	.46
VI. Embarrassment	3.90	0.98	38.6	61.4	.43

In looking at the percentage of subjects who agreed or disagreed with each attitude, it was found that although the majority of the subjects (65.2%) did not perceive menstruation as very debilitating, 68.9% agreed that it was bothersome, 43.9% agreed that it was a natural/positive event and only 6.1% denied that it had an effect. These results are similar to those obtained by Brooks et al (1977) with an adult population except for the third attitude dimension - perceiving menstruation as a positive event. These authors found that the majority of their adult subjects (77%) reported that menstruation was a slightly positive event (mean score 4.64) whereas in the present study the majority of the subjects (56.1%) did not.

Reliability: Scale homogeneity was calculated using Cronbach's alpha coefficients for each dimension and these ranged from .26 to .46 (except for the attitude dimension : Menstruation as a bothersome event where a coefficient of .74 was obtained). These reliability coefficients are considerably lower than those reported by Brooks-Gunn et al (1980b). They found that scale homogeneity for each factor was high ranging from .90 to .97 for their adult group. (Mean age of the women in their study was 19.29 years). The higher internal consistencies obtained with the older age group suggests that the adolescents in this study have not developed consistent attitudes towards menstruation.

Intercorrelations between the six attitude dimensions.

From Table 8, it can be seen that certain relationships exist between the six attitude dimensions. Girls who perceive menstruation as a debilitating event are also likely to perceive it as predictable and embarrassing and less likely to deny its effects. Also those who perceive menstruation as a bothersome event are more likely to perceive it as embarrassing and less likely to to perceive it as a positive/natural event. These relationships were in the expected direction with the negative attitudes (I, II, IV and VI) intercorrelating and the positive attitudes (III and V) correlating with each other.

Table 8 Intercorrelations between the 6 attitude dimensions of the MAQ (Spearman Correlation Coefficients)

	Debilitating	Bothersome	Positive	Predictable	Denial	Embarrassment
1. Debilitating						
2. Bothersome	.100		.063	.411 **	-.174 *	.172 *
3. Positive		-	.271 **	.008	-.008	.170 *
4. Predictable				.121	.230 **	.048
5. Denial					-.098	.206 **
						-.224 **

* significance $\leq .05$
** significance $\leq .001$

Relationships between Age at Menarche, Length of Experience with Menstruation, Length of menstrual flow, and the MAQ.

From Table 9, it can be seen that length of experience with menstruation and length of menstrual flow were positively correlated with perceiving menstruation as a predictable event and age at menarche was negatively correlated with this attitude dimension. These findings suggest that the younger the girls were when they first started menstruating and hence the greater the length of experience they have had with menstruation the more likely they were to perceive menstruation as a predictable event whose onset could be anticipated. It was also found that longer periods were also related to perceiving menstruation as a predictable event.

Table 9 Spearman Correlations of Age at Menarche, Length of experience with menstruation, and Length of menstrual flow with the MAQ.

MAQ	Age at Menarche	Experience	Length of flow
6 attitude dimensions			
Debilitating	- .102	- .029	.075
Bothersome	- .088	.004	.069
Positive	.061	- .002	- .087
Predicted and Anticipated	- .305 **	.268 **	.132 *
Denial	.064	- .010	- .020
Embarrassment	- .013	- .104	- .045

* significance \leq 0.05

** significance \leq 0.01

2.2.2 Test of Hypotheses

2.2.2.1 Locus of Control and Menstrual Experience

Results relating locus of control and the menstrual experience are shown in Table 10.

Hypothesis 1 predicted that externality as measured by the HLC and the MLC scales is likely to be positively correlated with the Pain, Negative Affect, Concentration and Behavior Change scales of the MDQ. No significant relationship was expected between locus of control and the remaining scales of the MDQ.

Correlations between the MLC and all four subscales were as predicted but although the correlations were statistically significant they were low. Significant correlations with the HLC were obtained only for the Behavior Change and Negative Affect scales of the MDQ. There were no significant correlations between the MLC, HLC scales and the remaining four scales of the MDQ except that the MLC and Water Retention Scale correlated .149 ($p < 0.05$).

The Water Retention scale is a measure of physiological responses and states associated with the menstrual cycle and is not likely to be affected noticeably by an individual's locus of control orientation. However, as externals usually perceive themselves as experiencing greater distress than internals, they may have reported experiencing a greater number of symptoms on this scale.

Hypothesis 2 predicted that length of menstrual flow would be positively related to externality. However only nonsignificant correlations were obtained between the MLC ($r = .124$), the HLC ($r = .095$) and length of flow.

Table 10 Spearman Correlations between the MLC, HLC and the MDQ.

MDQ	MLC with the MDQ	HLC with the MDQ
Total Distress	.157 *	.163 *
Menstrual Phase	.151 *	.122
Premenstrual Phase	.160 *	.190 **
Intermenstrual Phase	.092	.129
Pain	.155 *	.087
Concentration	.183 **	.101
Behavior Change	.186 **	.148 *
Autonomic Reactions	- .008	.092
Water Retention	.149 *	.033
Negative Affect	.145 *	.193 **
Arousal	.046	- .001
Complainer	.103	.104

* significance \leq 0.05

** significance \leq 0.01

2.2.2.2 Locus of Control and Menstrual Attitudes

Results relating locus of control and Menstrual Attitudes are shown in Table 11.

Hypothesis 3 predicted that externality as measured by the two locus of control scales would be positively correlated with perceiving menstruation as a debilitating, bothersome, predictable, and embarrassing event, and negatively correlated with denying the effects of menstruation. It was found with both locus of control measures that externality was positively correlated with perceiving menstruation as a bothersome event and the MLC was negatively correlated ($r = -.349$) with the attitude dimension "Denial of the effects of menstruation".

The fact that the positive relationships predicted between externality and perceiving menstruation as a debilitating, predictable and embarrassing event were not obtained in this study may be explained on the grounds that although the majority of the subjects did perceive menstruation as a bothersome event, they did not perceive menstruation as very debilitating or embarrassing. No relationship was expected between locus of control and perceiving menstruation as a natural/positive event and none was found.

Table 11 Spearman Correlations between the MLC, HLC and the MAQ.

Attitude Dimensions	MLC	HLC
1. Debilitating	.086	.029
2. Bothersome	.178 *	.286 **
3. Positive	- .100	- .046
4. Predicted and Anticipated	.095	- .019
5. Denial	- .349 **	- .079
6. Embarrassment	.120	.000

* significance \leq 0.05

** significance \leq 0.01

2.2.2.3 Menstrual Attitudes and Menstrual Distress

Results relating Menstrual Attitudes and Menstrual Distress are shown in Table 12.

Hypothesis 4 predicted that the greater the perception of menstruation as a debilitating and predictable event, the more likely are girls to report higher symptomatology on all scales of the MDQ (except the Arousal and Complianr Scales).

Significant correlations were obtained between perceiving menstruation as a debilitating event and all scales of the MDQ (except the Arousal and Complainer scales). Correlation coefficients ranged from .362 for the Pain Scale to .145 for the Negative Affect Scale. For the attitude dimension 'Perceiving menstruation as a predictable event', significant correlations were obtained with all scales of the MDQ (except the Arousal scale) and these ranged from .508 for the Pain Scale to .225 for the Complainer Scale.

Thus the predicted relationships were obtained in this study such that girls who preceived menstruation as a debilitating and predictable event reported experiencing higher symptomatology on the MDQ than girls who did not perceive it as such.

Hypothesis 5 predicted a negative relationship between the attitude dimension 'Denial of the effects of menstruation' and reported distress on all scales of the MDQ except the Arousal scale. Weak negative relationships

Table 12 Spearman Correlations between MAQ and MDQ

MAQ - Attitude Dimensions						
MDQ	Debilitating	Bothersome	Positive	Predictable	Denial	Embarrassment
Total Distress	.268 **	.030	.196 **	.464 **	-.091	.030
Menstrual Phase	.325 **	.073	.168 *	.438 **	-.125	.063
Premenstrual Phase	.212 **	-.007	.196 **	.494 **	-.052	.029
Intermenstrual Phase						
Pain	.095	.014	.125	.246 **	-.025	-.001
Concentration	.362 **	.084	.126	.508 **	-.062	.071
Behavior Change	.290 **	-.042	.145 *	.354 **	-.041	.044
Autonomic Reactions	.256 **	.090	.117	.220 **	-.155 *	.079
Water Retention	.203 **	.087	.141 *	.348 **	-.052	.136 *
Negative Affect	.330 **	.048	.245 **	.359 **	.083	.087
Arousal	.211 **	.038	.128	.484 **	-.126	.127
Complainer	-.073	-.141 *	.182 **	.100	.018	-.155 *
	.181	-.077	.013	.225 **	-.018	-.045

* significance ≤ 0.05

** significance ≤ 0.01

were obtained for all scales (except the Arousal scale) of the MDQ but the only significant relationship was obtained for the Behavior Change scale .155 ($p < .05$). So although these results are consistently in the predicted direction, the trends are not strong enough to reach significance.

2.2.2.4. Health Locus of Control and Menstrual locus of control

Hypothesis 7 predicted that the health locus of control scale and the menstrual locus of control scale would be positively correlated and that the MLC would be a better predictor of menstrual distress and attitudes towards menstruation than the health locus of control scale. In view of the extremely low internal consistency coefficients obtained with the MLC and the HLC scales particularly the MLC, the correlations obtained using these measures must be viewed with caution. The Spearman correlation coefficient between the MLC scale and the HLC scale (.134, $p = .06$) was in the predicted direction but not significant.

However in spite of the extremely low internal consistency of the MLC, it appears to be a better predictor of menstrual distress than the HLC. Higher and more significant correlations were obtained between the MLC and the Pain, Concentration, Behavior Change and Water Retention scales of the MDQ than between the HLC and these measures. (Refer to Table 10). Correlations between the MLC and the MAQ were significant for only two of the six

attitude dimensions ie 'Menstruation as a bothersome event' and 'Denial of the effects of menstruation'. Significant correlations between the HLC and the MAQ were found for only one of the six attitude dimensions ie 'Menstruation as a bothersome event'. (Refer to Table 11).

2.3 DISCUSSION AND CONCLUSION

The aim of the present study was to examine the relationship between health locus of control beliefs, menstrual locus of control beliefs, attitudes towards menstruation and the menstrual experience in adolescent girls. It seemed likely on the basis of locus of control studies with children (Nowicki and Strickland 1973, and Parcel and Meyer 1978) that, by the time a girl reached menarche, she would have developed certain expectations of control in relation to health which would in part determine her experience of menarche and subsequent menstrual cycles. With experience with menstruation, she was expected to develop certain expectations of control in relation to the menstrual cycle.

The outcome of the study that needs to be addressed first is the very low internal consistencies of several of the measures used. That of the MLC is negligible .07; that of the HLC is .58, and those of the dimensions of the MAQ range from .26 to .46 (with exception of one dimension where the coefficient was .74).

The HLC scale has been used in various American studies and the results of these studies have shown that the internal consistency of the scale increases with age, since locus of control is the outcome of social learning. The internal consistency coefficient of only .58 of the HLC found in the present study is lower than was reported (.72) by Wallston et al 1976 for college students. One possible explanation is that the girls in the present study have not yet developed consistent control expectancies or are at a relatively early developmental stage in relation to locus of control.

Lack of development is a parsimonious explanation which might be suggested to account also for the internal consistencies of the other measures (the MAQ and MDQ) used in this study being lower than those reported in the American studies. This might also account for the very low value obtained here for the MLC. This scale was devised for this study and has not been used with any other group. The items which comprise it appear to be relevant to the menstrual experience and similar in form to those which comprise other locus of control measures, so the scale seems to have face validity. Its construct validity assumes that a unitary MLC evolves with experience of menstruation, but there is no research evidence that this is the case. Certainly the girls have had limited experience of menstruation and for a majority of the girls, their cycles have not as yet established a regular pattern. There is also evidence, that early menstrual cycles are anovulatory and regular cycles do not seem to be

established for several years after menarche. If menstrual experience is erratic in early years, consistent attitudes and perceptions of control in relation to the menstrual cycle cannot be expected to develop before the cycles are well established.

As a preliminary test of the hypothesis that lack of development may underlie the low internal consistency of the two locus of control scales, they were both subsequently administered to a group of 53 first year psychology students at the Australian National University. (For details of test results see Appendix III).

The mean age of this second group of respondents was 21 years and 5 months (SD 6.21). With this older group of respondents, both the MLC and the HLC scales had higher internal consistencies (.33 for the MLC and .74 for the HLC) than those found with the original group of respondents. This internal consistency coefficient of .74 for the HLC compares favourably with that reported by Wallston et al (1976) for his group of college students. Also the correlation between the two measures (MLC and HLC) in this second group of older women was higher (.409 $p = .001$) than that found in the original study (.134 $p = .06$) and compares favourably with that obtained by Wallston et al (1978) between Rotter's I - E scale and the HLC (.33 $p = .01$). The correlation between the MLC and HLC in the older group provides support for the concurrent validity of the MLC.

On theoretical grounds, based on the model postulated in section 2.1.1 'Hypotheses', a menstrual locus

of control was expected to start developing later than a health locus of control. Now if the girls are at an early stage of development of locus of control expectations in relation to both health and menstruation, a lower internal consistency coefficient might be expected for the MLC than for the HLC. Only later in life, when ample experience of both health matters in general and the menstrual experience has allowed the development of consistent locus of control orientations, will Rotter's (1975) prediction be upheld and the more specific expectancy be more closely related to menstrual attitudes and experience than a more generalized one. However, in assessing the relative usefulness of the two scales used in the present study, it must also be remembered that where as the HLC has 11 items, the MLC has only 7 and the different scale lengths limit the comparability of the reliability estimates obtained from the two scales. Answers given by the adolescent girls to item 1 of the MLC have some speculative interest in relation to the lack of evidence for the existence of a formulated locus of control construct on the menstrual locus of control scale. 75% of the girls agreed with the statement "Following doctors orders is the best way to deal with the pain associated with menstruation". This would suggest that the girls had more faith in the role of a 'powerful other' in this case the doctor, in dealing with menstrual pain, than in their ability to do so on their own initiative. One would expect that a belief in powerful others would be stronger in adolescence than in adulthood because the social climate would be conducive to the

development of such beliefs and this may be a reflection of the stage of development the girls were at in relation to menstrual locus of control beliefs.

This may mean that if the majority of girls felt that the only way to deal with menstrual symptoms was by doing what the doctor prescribed, then their answers to the other items on the scale may have little real meaning and little bearing on their behaviour. However as item 1 of the MLC deals specifically with menstrual pain and although a single item offers but slender evidence on which to base a hypotheses, perhaps the tendency to regard doctors as all powerful may only be in relation to certain aspects of the cycle. Menstrual locus of control may not be a unitary concept, as the menstrual experience is accompanied by a wide range of both physical and emotional symptoms and the girls may develop different perceptions of control about different aspects of the cycle. Should this prove to be the case, a generalized menstrual locus of control measure will continue at all ages to have a low internal consistency and be of little value in understanding the menstrual experience. Of the university students in the supplementary study, 62% agreed with item 1 in the MLC, stressing the importance of the doctor's role in controlling menstrual pain. This finding provides further support for the suggestion, that menstrual locus of control may not be a unitary concept.

To summarize this section of the discussion on locus of control the fact that higher internal consistency coefficients were obtained with the older women supports the

suggestion that health and menstrual locus of control beliefs are not yet well developed in this group of adolescents. Girls may need to experience numerous menstrual cycles in order to build up cognitive associations between perceptions of control and menstrual distress. The older women, it is suggested, held more consistent beliefs because they had had more experience than adolescents of both health in general and menstruation. However the fact that in both studies the internal consistency coefficients of the MLC were low may mean that locus of control beliefs do not form a unitary construct and may have little relevance in understanding the menstrual experience.

Given the low reliabilities of the scales, particularly the MLC, it was surprising to find that most of the relationships predicted were consistently in the predicted directions and statistically significant although they were low in magnitude. The locus of control construct is but one element of a behavioural prediction formula which also includes reinforcement value and situational determinants. The menstrual cycle is an extremely complex phenomenon and is determined by physiological, psychological, biochemical, social, cultural and several other factors. Hence

"when research is presented focussing on locus of control as a sole predictor of a given set of criteria, it necessarily represents a limited approach to the prediction of those criteria, such that high magnitude relationships should not be anticipated" (Lefcourt 1972 p2).

The findings of this study speak to several points:

First, in looking at the relationship between locus of control and the menstrual cycle, overall the results suggest that an external locus of control orientation will be related to reporting greater distress on the MDQ in terms of both physical and emotional symptoms and holding more negative attitudes towards menstruation than an internal one. Externals are more likely than internals to report experiencing greater pain, more negative affect, have greater difficulties in concentration and are more prone to engage in avoidance behaviours such as taking naps, avoiding social activities during menstruation. These findings are consistent with the research evidence on the relationship between locus of control and pain, negative mood states and stress in general discussed in the literature review and further attests to the similarity of the menstrual experience to the experiences of pain, negative mood states and stress in general.

Second, consistent with the findings of Brooks et al (1977) and Brooks-Gunn et al (1980b) for college women, it was found that the attitude dimensions on the MAQ related to reported distress on the MDQ. Girls who reported greater distress also tended to hold more negative attitudes towards menstruation and perceived it as a more debilitating and predictable event than those who reported less distress. It was also found that denying the effects of menstruation was related to reports of lower symptomatology on the MDQ.

According to Brooks-Gunn et al (1980b), the American adolescents in their study perceived menstruation as natural, not very debilitating, bothersome or predictable but having some effect. The Australian adolescents in this study, had more negative attitudes than the American adolescents and perceived menstruation as bothersome, predictable, not very debilitating but not very positive all the same.

Third, consistent with the findings of Golub et al (1981) and Moos (1969), the girls in this study reported that the symptoms they experienced varied with cycle phase and they fairly consistently complained of greater distress in the menstrual phase of the cycle than in the other two phases. However unlike the subjects in the Moos and Golub et al studies, the girls in the present study reported cycle phase effects for the Arousal and Complainer scales of the MDQ which are not usually affected by cycle phase. This might suggest that the girls in this study were responding to the MDQ items in terms of stereotypic beliefs and socially mediated expectations that they may hold concerning the negative aspects of menstruation and cyclic changes. Parlee (1974) and Brooks et al (1977) have also suggested on the basis of their findings that as women hold reasonably clear societal beliefs regarding menstrual symptoms, these stereotypic beliefs may be important determinants of self-reported cyclic changes. The tendency for women to report on menstrual questionnaires in terms of socially mediated expectations of menstrual debilitation raises doubts about the validity and usefulness of questionnaire methods in this area.

Fourth, it was found that in spite of its low reliability, the MLC scale was a better predictor of menstrual distress and attitudes towards menstruation than the HLC scale. Although the correlations between the MLC and the menstrual cycle measures were low, most of them were in the predicted direction and were statistically significant. This supports Rotter's suggestion that specific measures of locus of control are more useful in situations where individuals are likely to have specific experiences and so such expectancies are likely to develop.

Finally, it was found that greater the length of experience with menstruation, the greater the number of symptoms reported on the MDQ. Hence as experience with menstruation increased, the greater the menstrual distress experienced. It was also found that the greater the length of menstrual flow, the greater the distress reported on the MDQ. Greater distress is likely to mean that there are more cues signalling the onset of menstruation and a positive relationship was found between each of these two variables, experience with menstruation and length of menstrual flow, and perceiving menstruation as a predictable event.

Conclusion: In comparing the results obtained in this study of Australian adolescents with those in America mainly with older women, the adolescents although they appear to hold more negative attitudes towards menstruation have less regular cycles, they report having similar menstrual experiences. This would imply that as far as menstrual experience and menstrual related attitudes are

concerned there do not appear to be many differences between the two cultures. However, the consistently lower reliability estimates obtained with the adolescents on most menstrual cycle measures than with older women, suggests a consistent set of attitudes towards menstruation may not have developed as yet in this group of adolescents and this may be due to the age differences between the group and hence the lack of experience with menstruation in the former. In studying the locus of control construct in Australian adolescents, the low reliabilities of the health and menstrual locus of control scales obtained with the adolescents has been interpreted as suggesting that consistent beliefs in relation to health and menstruation are only beginning to develop in this group of adolescents. The supplementary data offers tentative evidence they they will develop with age and experience.

Given the wide use of the locus of control construct in the research literature, and its general acceptance as a relatively stable personality trait, it would seem that a useful direction for future research is the course of development of both general and specific control orientations. What are the conditions, both intradimensional and external which govern their development? How does the development of control orientations relate to cognitive level? Do they pass through distinguishable stages as they evolve? How are control orientations directed towards different areas of experience related to one another? Attempts to answer such questions have so far been few and would add an important

dimension to the understanding of the locus of control construct. Only when some of these questions about the construct have been answered does it seem likely that it can contribute significantly to our understanding of the menstrual experience.

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APPENDIX 1. Menstrual Attitude Questionnaire (MAQ) and the Locus of Control Scales

Health and Menstruation in Young Women

Thank you for taking part in this study. Its aim is to find out girls' attitudes towards health and menstruation and about experiences of menstruation. As we want to compare the results of this study with those of others, mostly done in U.S.A., we need some general information about the people who complete the questionnaires: We also need to be able to put together the answers you give today with those you give in 6 weeks time.

So to begin, please answer these questions about yourself. All the information you give will be seen only by the research worker and will remain confidential.

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- | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------|------|
| 1. Name: | | <input type="checkbox"/> | 1 |
| 2. Age: | years | <input type="checkbox"/> | 2 |
| 3. School | Grade | <input type="checkbox"/> | 3, 4 |
| 4. Are you an Australian citizen? | Yes | <input type="checkbox"/> | 5 |
| If not, what is your nationality? _____ | | | |
| 5. What is the present occupation of your father (stepfather or other male supporting your family)? Please give as many details as possible about his job. e.g. teacher in primary school; plumber; own's own bookshop; clerk Class 8 in the Public Service; Colonel in Army. If no such male wage earner in the family, write 'none'. | | <input type="checkbox"/> | 6 |
| _____ | | | |
| 6. What is the present occupation of your mother (or stepmother, foster mother etc.)? Please give us as many details as possible. | | <input type="checkbox"/> | 7 |
| _____ | | | |
| 7. Religion: Please tick the one which applies to you | | | |
| (a) Roman Catholic | [] | | |
| (b) Protestant (this includes Church of England, Methodist, Presbyterian, Uniting Church) | [] | <input type="checkbox"/> | 8 |
| (c) Other | [] | | |
| (d) None | [] | | |
| 8. Age when you began to menstruate | _____ | <input type="checkbox"/> | 9 |

On the following pages are a series of attitude statements. Each represents a commonly held opinion. There are no right or wrong answers. You will probably agree with some items and disagree with others.

Please read each statement carefully and indicate how much you agree or disagree with each one.

If you disagree a lot,	circle "1"
If you just disagree,	circle "2"
If you disagree a little bit,	circle "3"
If you agree a little bit,	circle "4"
If you agree with it,	circle "5"
If you agree a lot,	circle "6"

After you have read a statement and made your choice, Circle the number you have chosen.

Please answer every statement. DO NOT LEAVE ANY BLANKS.

Examples

1	2	3	4	5	6
disagree a lot	disagree	disagree a little bit	agree a little bit	agree	agree a lot

- a) Whenever I receive good grades in a subject, it is always because I have studied hard for that subject.
- 1 2 3 4 5 6
- b) Sometimes my success on exams depends on some luck.
- 1 2 3 4 5 6

I

This first set of questions is about your attitudes towards menstruation.

		1	2	3	4	5	6	
		disagree a lot	disagree	disagree a little bit	agree a little bit	agree	agree a lot	
VI	1. When I have my menstrual period, I am worried that someone will know.	1	2	3	4	5	6	<input type="checkbox"/> 10
II	2. I envy boys because they don't have menstruation.	1	2	3	4	5	6	<input type="checkbox"/> 11
II	3. Menstruation is something to be happy about.	1	2	3	4	5	6	<input type="checkbox"/> 12
VI	4. When I have my menstrual period, I am worried that I'll have an accident (like spots on a skirt).	1	2	3	4	5	6	<input type="checkbox"/> 13
II	5. Menstruation is something I would prefer not to have.	1	2	3	4	5	6	<input type="checkbox"/> 14
I	6. I make an extra effort not to be irritable during my period.	1	2	3	4	5	6	<input type="checkbox"/> 15
III	7. You shouldn't talk to just anyone about menstruation.	1	2	3	4	5	6	<input type="checkbox"/> 16
III	8. Menstruation gives women a way to keep in touch with their bodies.	1	2	3	4	5	6	<input type="checkbox"/> 17
I	9. Women are more tired than usual when they are menstruating.	1	2	3	4	5	6	<input type="checkbox"/> 18
II	10. I would like it to be possible some day to get a menstrual period over within a few minutes.	1	2	3	4	5	6	<input type="checkbox"/> 19
I	11. I feel as fit during menstruation as I do during any other time of the month.	1	2	3	4	5	6	<input type="checkbox"/> 20
III	12. Menstruation is a reminder of one's womanhood.	1	2	3	4	5	6	<input type="checkbox"/> 21
IV	13. I can tell my period is coming because of breast soreness, backache, cramps or other physical signs.	1	2	3	4	5	6	<input type="checkbox"/> 22

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1	2	3	4	5	6
disagree	disagree	disagree	agree	agree	agree
a lot		a little	a little		a lot
		bit	bit		

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Use Only

- | | | | | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|-----------------------------|
| V | 14. Most women make too much of the minor physical effects of menstruation. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 23 |
| II | 15. Menstruating every month is a sign of a woman's general good health. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 24 |
| V | 16. I am more easily upset just before or during my menstrual period than at other times of the month. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 25 |
| | 17. Cramps bother you only if you pay attention to them. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 26 |
| | 18. Others should not be critical of a woman who is easily upset before or during her menstrual period. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 27 |
| | 19. Following doctor's orders is the best way for a girl who experiences pain with menstruation to deal with it. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 28 |
| | 20. If a girl takes good care of herself, her periods will cause her little or no trouble. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 29 |
| | 21. I have no way of influencing how I feel during my menstrual cycle. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 30 |
| | 22. If a girl is having problems at home or at school, she is more likely to have pain before or during her period. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 31 |
| | 23. I am the only person who can do anything to help myself if my period causes me discomfort. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 32 |
| | 24. Whether or not a girl has discomfort with her period is just a matter of luck. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 33 |
| | 25. A girl need not experience pain with menstruation if she decides to do something about it. | 1 | 2 | 3 | 4 | 5 | 6 | <input type="checkbox"/> 34 |

II

This second set of questions is about your attitudes towards health in general. Answer them in the same way as the first set.

		1	2	3	4	5	6							
		disagree a lot	disagree	disagree a little bit	agree a little bit	agree	agree a lot							
								For Office Use Only						
i	1.	If I take care of myself, I can avoid illness.					1	2	3	4	5	6	<input type="checkbox"/>	35
i	2.	Whenever I get sick it is because of something I've done or not done.					1	2	3	4	5	6	<input type="checkbox"/>	36
e	3.	Good health is largely a matter of good fortune.					1	2	3	4	5	6	<input type="checkbox"/>	37
e	4.	No matter what I do, if I am going to get sick I will get sick.					1	2	3	4	5	6	<input type="checkbox"/>	38
e	5.	Most people do not realize the extent to which their illnesses are controlled by accidental happenings.					1	2	3	4	5	6	<input type="checkbox"/>	39
e	6.	I can only do what my doctor tells me to do.					1	2	3	4	5	6	<input type="checkbox"/>	40
e	7.	There are so many strange diseases around that you can never know how or when you might pick one up.					1	2	3	4	5	6	<input type="checkbox"/>	41
i	8.	When I feel ill, I know it is because I have not been getting the proper exercise or eating right.					1	2	3	4	5	6	<input type="checkbox"/>	42
e	9.	People who never get sick are just plain lucky.					1	2	3	4	5	6	<input type="checkbox"/>	43
i	10.	People's ill health results from their own carelessness					1	2	3	4	5	6	<input type="checkbox"/>	44
i	11.	I am directly responsible for my health.					1	2	3	4	5	6	<input type="checkbox"/>	

ATTITUDE DIMENSIONS OF THE MAQ

- I Menstruation as a debilitating event
- II Menstruation as a bothersome event
- III Menstruation as a natural event
- IV Anticipation of the onset of menstruation
- V Denial of any effect of menstruation
- VI Embarrassment about menstruation
- i Internal item
- e External item

Menstrual Questionnaire

Name: _____

Age: _____

Today's Date: _____ []

Write the dates of your most recent menstrual period (flow):

From: _____ To: _____ [] 101

Please indicate how regular your menstrual cycle has been during the last year by ticking the number that applies to you:

- | | | |
|---------------------------------------------------------|-------|-----------|
| 1. Always within \pm 2 days from the expected date | [] | |
| 2. Always within \pm 3-6 days from the expected date | [] | [] 102 |
| 3. Always within \pm 1-2 weeks from the expected date | [] | |
| 4. Varied, more than 2 weeks from the expected date | [] | |

The following medications may affect your experience of your menstrual cycle. Please tick any of the following medications that you may have taken during the last 7 weeks:

- | | | |
|------------------------------------------------------|----------------------------|-----------|
| 1. Pain Killers e.g. Disprin, Panadol, etc. | [] | |
| 2. Vitamins | [] | |
| 3. Hormones, e.g. Contraceptive Pills | [] | |
| 4. Minerals, e.g. Calcium, Iron | [] | [] 103 |
| 5. Diuretics for Water Retention | [] | |
| 6. Mood Changes, e.g. Tranquilizers, Antidepressants | [] | |
| 7. Other | [] Please specify _____ | |

On the next two pages is a list of symptoms which girls sometimes experience.

Please describe your experience of each of these symptoms during the three different time periods listed below:

Column 1: During your most recent menstrual flow.

Column 2: During the one week before your most recent menstrual flow.

Column 3: During the remainder of your most recent menstrual cycle.

Note: The answers you put in columns 1, 2, and 3 should be accurate for your experience specifically during your most recent menstrual cycle.

Please do not simply report your general experience. Also, please report any experience of these symptoms whether or not they seem to you to be related to your menstrual cycle.

For each answer choose the descriptive category listed which best describes your experience of that symptom during that time. Write the number of that description in the space provided. Even if none of the descriptions are exactly correct, choose the one that best describes your experience. Do not leave any blank spaces.

Descriptive Categories

- 1 - no experience of symptom
- 2 - barely noticeable
- 3 - present, mild

- 4 - present, moderate
- 5 - present, strong
- 6 - acute, very strong

	1. most recent flow	2. week before	3. remainder of cycle
1. Weight gain	_____	_____	_____
2. Insomnia, Sleep disturbance	_____	_____	_____
3. Crying	_____	_____	_____
4. Lowered school or work performance	_____	_____	_____
5. Muscle stiffness	_____	_____	_____
6. Forgetfulness	_____	_____	_____
7. Confusion	_____	_____	_____
8. Take naps or stay in bed	_____	_____	_____
9. Headache	_____	_____	_____
10. Skin disorders	_____	_____	_____
11. Loneliness	_____	_____	_____
12. Feelings of suffocation	_____	_____	_____
13. Affectionate	_____	_____	_____
14. Calm	_____	_____	_____
15. Stay home from work or school	_____	_____	_____
16. Stomach cramps	_____	_____	_____
17. Dizziness or faintness	_____	_____	_____
18. Excitement	_____	_____	_____
19. Chest pains	_____	_____	_____
20. Avoid social activities	_____	_____	_____
21. Anxiety	_____	_____	_____
22. Backache	_____	_____	_____
23. Cold sweats	_____	_____	_____
24. Poorer judgment than usual	_____	_____	_____
25. Fatigue	_____	_____	_____
26. Nausea or vomiting	_____	_____	_____
27. Restlessness	_____	_____	_____
28. Hot flushes	_____	_____	_____

1 - no experience of symptom
 2 - barely noticeable
 3 - present, mild

4 - present, moderate
 5 - present, strong
 6 - acute, very strong

	1. most recent flow	2. week before	3. remainder of cycle
29. Difficulty in concentration	_____	_____	_____
30. Painful or tender breasts	_____	_____	_____
31. Feelings of well-being	_____	_____	_____
32. Buzzing or ringing in ears	_____	_____	_____
33. Distractable	_____	_____	_____
34. Swelling (e.g. abdomen, breasts or ankles)	_____	_____	_____
35. Accidents (e.g. cut finger, break dish)	_____	_____	_____
36. Irritability	_____	_____	_____
37. General aches and pains	_____	_____	_____
38. Mood swings	_____	_____	_____
39. Heart pounding	_____	_____	_____
40. Depression (feeling sad or blue) . . .	_____	_____	_____
41. Decreased efficiency	_____	_____	_____
42. Lowered motor coordination, more clumsy	_____	_____	_____
43. Numbness or tingling in hands or feet. .	_____	_____	_____
44. Change in eating habits	_____	_____	_____
45. Tension	_____	_____	_____
46. Blind spots or fuzzy vision	_____	_____	_____
47. Bursts of energy or activity	_____	_____	_____

In what ways, if any, was your most recent menstrual cycle unusual?

APPENDIX 3

SUPPLEMENTARY STUDY

Description of Respondents

The subjects consisted of 53 first year psychology students at the Australian National University. Mean age of the respondents was 21.52 years (SD 6.21). The minimum age was 17 years 4 months and the maximum was 50 years.

Marital Status: 84.9% were single
11.30% were married
3.8% missing data

Testing Procedure: The women were asked to complete the MLC scale and the HLC scale and the instructions given were the same as those given to the adolescent girls in the main study. The only change made in the MLC questionnaire was that the word "girl" was changed to "woman" in every item that it occurred in.

Results

Descriptive Data for the MLC

Mean = 25.7; SD. = 4.22

Reliability: Cronbach's alpha coefficient for the full scale = .33

Descriptive Data for the HLC

Mean = 34.47; SD. = 6.44

Reliability: Cronbach's alpha coefficient for the full scale = .74

Correlation between the MLC and HLC scales (N=53)

Spearman Correlation Coefficient = .409; significance = .001